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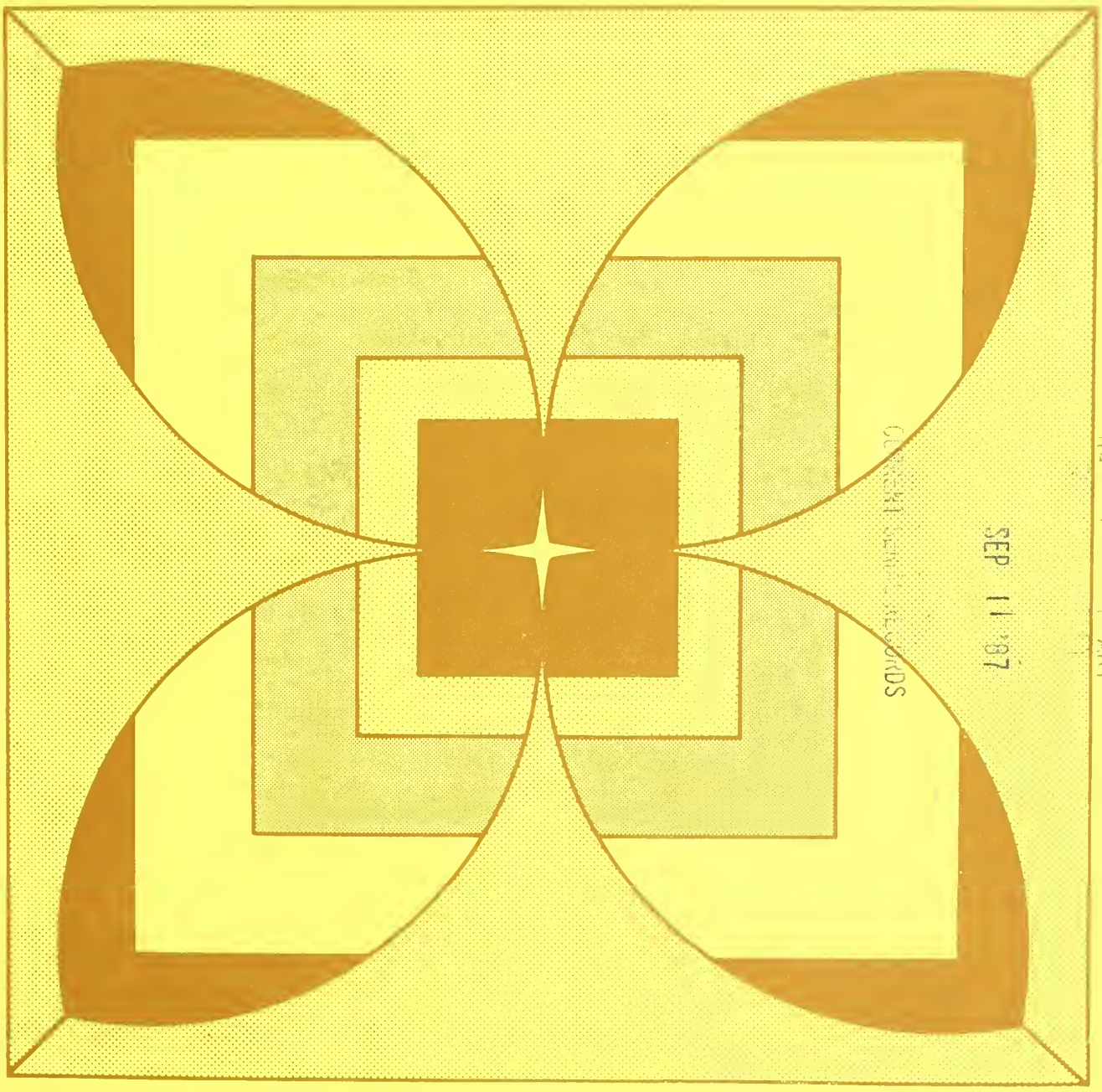
The European Community's Horticultural Trade:

Implications of EC Enlargement

Kirby S. Moulton



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THE EUROPEAN COMMUNITY'S HORTICULTURAL TRADE: IMPLICATIONS OF EC ENLARGEMENT, by Kirby S. Moulton, International Economics Division, Economic Research Service. Foreign Agricultural Economic Report No. 191.

ABSTRACT

The European Community (EC) will likely import $269 million of oranges, grapes, raisins, almonds, canned peaches, and processed tomatoes from the United States in 1986, a 12-percent increase from the $238.6-million average in 1978-80. The EC's elimination of tariff and nontariff barriers on imports from Greece, Spain, and Portugal will cut imports from the United States by $4.5 million; however, increased demand stimulated by income growth will boost imports nearly $35 million. Changes in EC policy will likely affect trade patterns more than will elimination of tariff and nontariff barriers.

Keywords: European Community, Common Agricultural Policy, Greece, Spain, Portugal, EC enlargement, horticultural trade.

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FOREWORD

The European Community (EC), the largest market for U.S. agricultural exports, is in the process of its second enlargement, which began when Greece joined the EC on January 1, 1981. Enlargement is expected to extend to Spain and Portugal in the mideighties.

The second enlargement appears to be even more significant than the first (which took place January 1, 1973 when Denmark, Ireland, and the United Kingdom joined the original six members) because it will considerably increase the EC's economic and agricultural diversity. The second enlargement also will occur in the context of a serious dialogue on modification of the Common Agricultural Policy (CAP) necessitated by an impending budget crisis. Surplus agricultural production in the EC has led to large expenditures under the CAP for surplus disposal. Expenditures are on the verge of exceeding available revenues through the EC's own resources provided by its basic treaties. Some modifications of the CAP appear inevitable.

To assess the implications of EC enlargement and modification of the CAP on U.S. agriculture, the Economic Research Service (ERS) initiated a research program that included cooperative efforts between researchers at the U.S. Department of Agriculture (USDA) and various U.S. universities. Researchers at Stanford University developed a framework for analyzing probable developments in the CAP. ERS published this study, Developments in the Common Agricultural Policy of the European Community by Timothy E. Josling and Scott R. Pearson, as FAER-172. Michigan State University researchers examined the feed-livestock sectors of the prospective member countries in a study, Spain's Entry into the European Community: Effects on the Feed Grain and Livestock Sectors by E. Wesley F. Peterson, Albert Pelach Paniker, Harold M. Riley, and Vernon L. Sorenson, published by ERS as FAER-180. ERS has recently published The EC Market for U.S. Agricultural Exports: A Share Analysis by Harold A. McNitt as FAER-179. It presents a market share analysis of the EC and assesses the market potential for all major U.S. exports. For ordering information on these and three other related reports, see inside covers.

Researchers at the University of California-Berkeley have now analyzed the implications of EC enlargement for trade in selected fruits, vegetables, and nuts. This report presents a detailed analysis of the structural aspects of the EC's trade with projections to 1986 for oranges, grapes, raisins, almonds, processed peaches, and processed tomatoes. A companion study at the University of California developed a model for projecting world trade patterns in fresh, dried, and processed fruit and fresh and processed vegetables, and it generated preliminary projections of EC imports. The analysis carried out in this report is based on the companion study, which is nearing completion.

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U.S. Department of Agriculture

GLOSSARY

European Community (EC)

Original six:

Belgium
France
Italy
Luxembourg
Netherlands
West Germany

Members since January 1, 1973:

Denmark
Ireland
United Kingdom (England, Scotland, Wales, and Northern Ireland)

Member since January 1, 1981: Greece

Unless otherwise specified, the discussion in this report of the EC's past trade patterns and other aspects excludes Greece. Portugal and Spain are expected to join the EC by the mideighties.

MEASURES

European Currency Unit (ECU). The monetary denominator for the exchange rate, credit, and intervention mechanisms of the European Monetary System (EMS).

Dollars. Converted from European Currency Units (ECU's) at quarterly or annual exchange rates.

Market Share. Volume share of the market unless specified as value share.

Tons. Refers to metric tons (2,204.6 pounds).

CONTENTS

SUMMARY

The European Community (EC) is projected to import $269 million of oranges, grapes, raisins, almonds, canned peaches, and processed tomatoes from the United States in 1986, a 12-percent increase from the $238.6-million average in 1978-80. The EC's elimination of tariff and nontariff barriers on imports from Greece, Spain, and Portugal will cut imports from the United States by $4.5 million; however, increased demand generated by income growth will boost imports nearly $35 million. Thus, net imports are projected to increase more than $30 million.

Changes in EC policy will likely affect trade patterns more than will the elimination of tariff and nontariff barriers to nonmember countries. For example, the high levels of subsidies granted to Greek raisin growers seriously disrupted market shares in 1982. Continuing that policy, extending export subsidies for Spanish oranges, or instituting a similar program for almonds could substantially alter the projected trade results. From the standpoint of U.S. policy, researchers on the EC should continue to focus on subsidy programs initiated to protect EC producers from import competition.

Because of the difficulty of accurately anticipating EC policy changes, this study provides import projections based on income growth, the elimination of tariff and nontariff barriers facing Greece, Spain, and Portugal, and the maintenance of other EC trade policies during the 1978-80 base period. These projections are that by 1986 the 1978-80 value of the EC's horticultural imports from the United States will grow as follows:

Commodity	Imports in 1978-80	Changes caused by-- Income growth	Changes caused by-- Eliminating tariff and nontariff barriers 1/	1986 projections
		1,000 dollars		
Oranges	23,151	5,420	-1,534	27,037
Grapes	3,046	255	-89	3,212
Raisins	27,503	1,584	-2	29,085
Almonds	173,776	21,687	-1,270	194,193
Canned peaches	10,703	5,810	-1,613	14,900
Processed tomatoes	438	212	-15	635
Total	238,617	34,968	-4,523	269,062

1/ Against Greece, Spain, and Portugal.

Despite an expected increase in imports from the United States, our share of the EC's import market will decline for four of the six commodities--grapes, raisins, almonds, and processed peaches:

Commodity	U.S. share of EC imports	
	1978-80	1986
	Percent	
Oranges	3.05	3.06
Grapes	.86	.79
Raisins	8.47	8.18
Almonds	61.45	60.17
Processed peaches	9.36	9.08
Processed tomatoes	.20	.20

This decline in the U.S. share of the import market is due to gains for the new member countries--Greece, Spain, and Portugal--resulting from elimination of tariff and nontariff barriers. The EC accepted Greece as a new member in 1981 and is expected to include Spain and Portugal by the mideighties.

The outlook for specific horticultural imports is as follows:

- Spain is the dominant supplier of oranges to the EC, accounting for 44 percent of imports in 1978-80. Spain is projected to increase its 1986 market share by 3 or 4 percentage points to the detriment of other suppliers.

- Italy is the dominant supplier of table grapes to the EC, providing 35 percent of its import volume in 1978-80. Both Spain and Greece are projected to obtain a larger share of the EC market in table grapes with enlargement, whereas most other suppliers will suffer reductions.

- Greece and Turkey are the leading suppliers of raisins to the EC, jointly accounting for 65 percent of import volume in 1978-80. The ability of the United States to maintain its current 7-percent market share in the EC depends entirely on its ability to maintain a competitive pricing strategy.

- Almond production is concentrated in the United States, Spain, and Italy. The EC is the world's leading importer of almonds. EC enlargement will modestly increase the share of the EC market for Spain and Portugal at the expense of the United States.

- South Africa supplied 37 percent of EC imports of canned peaches in 1978-80; the United States supplied 10 percent. Greece is projected to increase its share of EC imports by 11 percentage points by 1986, largely at the expense of South Africa; if so, the United States will suffer only a modest loss in its share of the market.

- Italy provided 65 percent of the import supply of processed tomatoes in 1978-80. Greece supplied 11 percent, and Spain supplied 7 percent. The 1986 projections show Greece, Spain, and Portugal will increase their share of the EC market for processed tomatoes as trade barriers to the EC are eliminated.

The European Community's Horticultural Trade:

Implications of EC Enlargement

Kirby S. Moulton *

INTRODUCTION

This report analyzes potential trade problems in specific horticultural products caused by enlargement of the European Community (EC) 1/. Readers are encouraged to refer to the forthcoming technical bulletin by Sarris for a full understanding of the projection methodology and alternative economic scenarios. The methodology Sarris developed is the basis for this closer examination of specific commodities.

The analysis of production and imports considers the quantity and value of imports by the EC from various supplying countries during 1978-80, the structure of import prices, the nature of government intervention in the production and marketing system in the EC and in supplier countries, and the status of production and exports by important commodity producers.

Projections of post-enlargement imports and market shares are derived directly from projections in the Sarris report (17), but are based on market results in the 1978-80 period rather than those in 1979 which Sarris used in his study. The methodology Sarris developed and the modifications I used for the projections in this report are described in the appendix. Some selected data from the Sarris report are also presented there.

Variable currency exchange rates significantly influenced trade patterns between 1978 and 1982 and could cause a major discrepancy between post-enlargement trade shares and those projected here. This possibility is not investigated, although one could do so by varying relative prices used in the model. Other factors which might skew the market outcome

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*The author is an economist with the Cooperative Extension Service, University of California-Berkeley.

1/ This report is one of two studies dealing with the problem. The other study, World Trade in Fruits and Vegetables: Projections for an Enlarged European Community by Alexander Sarris (17), is being prepared by the Economic Research Service of the U.S. Department of Agriculture (USDA) and should be published by early 1984. (Underscored numbers in parentheses refer to items in the references section at the end of this report.)

include policy changes, supply constraints, and different market growth rates.

ORANGES

Fresh citrus fruits account for the largest share of EC fresh fruit imports, and oranges are the most important citrus fruit. Oranges are produced within the EC and are imported from the acceding countries, from numerous producers with special trade preferences, and from major producers without preferences. EC enlargement is expected to significantly affect trade in oranges because of this complex pattern.

Structural Aspects of EC Trade

The structure of orange trade is defined by the pattern of imports and import prices, the degree of government intervention in the EC and in supplying countries, and the nature of production and exports by major producing countries.

Imports

The EC imported about 2 million tons of oranges and 700,000 tons of tangerines annually during calendar years 1978-80. The level of orange imports was down approximately 11 percent from the average level of 1969-71. The decline was fairly uniform throughout the period and resulted in lower per capita consumption of oranges in the importing nations of the EC.

Most orange imports (89 percent) were navels, valencias, shamoutis, or similar varieties. The remaining imports included the blood, semi-blood, and other minor varieties originating primarily in the Mediterranean basin. The United States and South Africa supplied small quantities of these varieties.

The level of competition facing the United States in the EC is determined by the imports of the principal varieties. For this reason, the following analysis focuses on the imports of fresh navels, navelinas, salustianas, vernas, late valencias, shamoutis, and other varieties included in the EC's Brussels Trade Nomenclature categories 0802.03, 0802.07, 0802.13, and 0802.17. Imports of these varieties averaged 1.745 million tons annually in 1978-80 and were valued at approximately $673 million or 17.5 cents per pound (table 1).

France and Germany were the most important orange markets in the EC, each receiving approximately 500,000 tons per year during 1978-80. Prices in the French market were slightly higher than in West Germany because of a different varietal and grade mix.

The United Kingdom and the Netherlands imported similar quantities, 288,000 tons and 270,000 tons, respectively. Belgium imported 143,000 tons and Denmark and Ireland imported only small quantities (table 1).

Reshipments figured importantly in the trade position of several countries. The Netherlands shipped 27,000 tons to other EC importers, which gave its auction markets an important pricemaking role. England reshipped 11,000 tons and France, West Germany, and Belgium reshipped an average of 26,000 tons per year.

Table 1--Selected information on EC imports of oranges, by member country, 1978-80 average 1/, 2/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
France:										
Quantity	1,000 kilograms	10,223	4,710	NA	--	1,848	2,351	1,157	100	57
Value	$1,000	5,578.8	2,677.1	NA	--	742.3	1,341.6	730.3	58.3	29.2
Average price	Dollars/kilogram	.545	.568	NA	--	.401	.570	.631	.583	.512
Price index	NA	141.92	156.04	NA	NA	104.69	132.55	158.94	133.71	142.61
Market share	Percent	.8	1.4	NA	--	.7	2.1	.6	.7	.3
Belgium/Luxembourg:										
Quantity	1,000 kilograms	6,830	1,997	2,381	--	1,697	NA	618	117	20
Value	$1,000	3,486.8	1,057.5	1,202.0	--	804.0	NA	350.9	62.9	9.4
Average price	Dollars/kilogram	.510	.529	.504	--	.473	NA	.567	.537	.470
Price index	NA	132.81	145.32	132.28	NA	123.49	NA	142.82	123.16	130.91
Market share	Percent	.5	.5	.6	--	.7	NA	.3	.8	.1
Netherlands:										
Quantity	1,000 kilograms	26,794	4,738	6,442	--	NA	7,968	6,575	712	359
Value	$1,000	14,836.1	2,701.9	3,177.2	--	NA	4,941.2	3,408.2	430.7	177.0
Average price	Dollars/kilogram	.553	.570	.493	--	NA	.620	.518	.604	.493
Price index	NA	144.01	156.59	129.39	NA	NA	144.18	130.47	138.53	137.32
Market share	Percent	2.2	1.4	1.6	--	NA	8.0	2.9	5.5	1.9
West Germany:										
Quantity	1,000 kilograms	8,629	NA	341	--	6,149	529	322	132	1,156
Value	$1,000	3,854.6	NA	165.7	--	2,614.6	304.8	181.7	67.3	520.4
Average price	Dollars/kilogram	.446	NA	.485	--	.425	.576	.564	.509	.450
Price index	NA	116.14	NA	127.29	NA	110.96	133.95	142.06	116.74	125.34
Market share	Percent	.5	NA	--	--	2.5	.4	.1	.8	5.5
Italy:										
Quantity	1,000 kilograms	8,078	6,782	157	--	43	986	10	7	93
Value	$1,000	3,038.2	2,451.2	64.8	--	18.4	453.0	7.8	2.8	40.2
Average price	Dollars/kilogram	.376	.361	.412	--	.427	.459	.780	.400	.432
Price index	NA	97.91	99.17	108.13	NA	111.48	106.74	196.47	91.74	120.33
Market share	Percent	.4	1.3	--	--	--	.7	--	--	.4
United Kingdom:										
Quantity	1,000 kilograms	10,863	55	78	--	1,001	53	NA	9,664	12
Value	$1,000	5,204.4	24.1	33.0	--	386.7	25.3	NA	4,729.7	5.6
Average price	Dollars/kilogram	.479	.438	.423	--	.386	.477	NA	.489	.466
Price index	NA	124.73	120.32	111.02	NA	100.78	110.93	NA	112.15	129.80
Market share	Percent	.7	--	--	--	.3	--	NA	61.3	--

See notes at end of table.

Continued--

Table 1--Selected information on EC imports of oranges, by member country, 1978-80 average (continued) 1/, 2/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
Ireland:										
Quantity	1,000 kilograms	637	--	--	--	--	--	637	NA	--
Value	$1,000	293.6	--	--	--	--	--	293.6	NA	--
Average price	Dollars/kilogram	.460	--	--	--	--	--	.460	NA	--
Price index	NA	119.79	NA	NA	NA	NA	NA	115.36	NA	NA
Market share	Percent	--	--	--	--	--	--	.2	NA	--
Spain:										
Quantity	1,000 kilograms	759,723	243,195	294,609	--	95,123	73,676	45,913	331	6,877
Value	$1,000	271,690.1	84,990.8	105,444.8	--	33,866.6	28,498.9	16,300.0	119.1	2,469.9
Average price	Dollars/kilogram	.357	.349	.357	--	.356	.386	.355	.359	.359
Price index	NA	92.96	95.87	93.70	NA	92.95	89.76	89.42	82.33	100.00
Market share	Percent	40.5	46.7	54.8	--	32.7	46.3	14.2	1.5	26.5
Greece:										
Quantity	1,000 kilograms	13,982	12,088	500	--	282	171	852	6	82
Value	$1,000	4,591.0	3,910.9	172.0	--	96.8	57.6	323.7	1.3	28.7
Average price	Dollars/kilogram	.328	.323	.344	--	.343	.336	.379	.216	.350
Price index	NA	85.41	88.73	90.28	NA	89.55	78.13	95.46	49.54	97.49
Market share	Percent	.6	2.1	--	--	--	--	.2	--	.3
Morocco:										
Quantity	1,000 kilograms	222,298	69,410	102,862	--	24,942	12,914	11,335	--	835
Value	$1,000	85,192.3	25,351.4	40,318.0	--	9,576.2	5,164.6	4,491.7	--	290.5
Average price	Dollars/kilogram	.383	.365	.391	--	.383	.399	.396	--	.347
Price index	NA	99.73	100.27	102.62	NA	100.00	92.79	99.74	NA	96.65
Market share	Percent	12.7	13.9	20.9	--	9.2	8.4	3.9	--	3.1
Algeria:										
Quantity	1,000 kilograms	1,048	34	1,015	--	--	--	--	--	--
Value	$1,000	326.6	11.5	315.1	--	--	--	--	--	--
Average price	Dollars/kilogram	.311	.338	.310	--	--	--	--	--	--
Price index	NA	80.98	92.85	81.36	NA	NA	NA	NA	NA	NA
Market share	Percent	--	--	.1	--	--	--	--	--	--
Tunisia:										
Quantity	1,000 kilograms	5,048	322	4,585	--	87	55	--	--	--
Value	$1,000	1,736.7	102.7	1,592.4	--	25.9	15.7	--	--	--
Average price	Dollars/kilogram	.344	.318	.347	--	.297	.285	--	--	--
Price index	NA	89.58	87.36	91.07	NA	77.54	66.27	NA	NA	NA
Market share	Percent	.2	--	.8	--	--	--	--	--	--

See notes at end of table.

Continued--

Table 1--Selected information on EC imports of oranges, by member country, 1978-80 average (continued) 1/, 2/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
Cuba:										
Quantity	1,000 kilograms	5,181	21	47	--	4,273	--	840	--	--
Value	$1,000	1,628.2	5.3	15.8	--	1,319.9	--	287.1	--	--
Average price	Dollars/kilogram	.314	.252	.336	--	.308	--	.341	--	--
Price index	NA	81.77	69.23	88.18	NA	80.41	NA	85.89	NA	NA
Market share	Percent	.2	--	--	--	1.2	--	.2	--	--
Brazil:										
Quantity	1,000 kilograms	37,102	697	848	--	31,589	296	3,599	--	73
Value	$1,000	11,437.1	243.4	295.1	--	9,606.0	79.9	1,187.4	--	25.3
Average price	Dollars/kilogram	.308	.349	.347	--	.304	.269	.329	--	.346
Price index	NA	80.20	95.87	91.07	NA	79.37	62.55	82.87	NA	96.37
Market share	Percent	1.7	.1	.1	--	9.2	.1	1.0	--	.2
Uruguay:										
Quantity	1,000 kilograms	6,493	27	84	--	6,143	46	194	--	--
Value	$1,000	2,861.2	17.2	33.0	--	2,711.3	20.1	79.6	--	--
Average price	Dollars/kilogram	.440	.637	.392	--	.441	.436	.410	--	--
Price index	NA	114.58	175.00	102.88	NA	115.14	101.39	103.27	NA	NA
Market share	Percent	.4	--	--	--	2.6	--	--	--	--
Argentina:										
Quantity	1,000 kilograms	13,344	471	3,342	--	9,157	18	343	6	7
Value	$1,000	5,830.2	208.3	1,435.3	--	4,045.3	8.5	126.1	3.4	3.4
Average price	Dollars/kilogram	.436	.442	.429	--	.441	.472	.367	.566	.485
Price index	NA	113.54	121.42	112.59	NA	115.14	109.76	92.44	129.81	135.09
Market share	Percent	.8	.1	.7	--	3.9	--	.1	--	--
Cyprus:										
Quantity	1,000 kilograms	50,426	2,745	261	--	9,468	1,434	35,191	872	455
Value	$1,000	19,281.3	1,044.6	88.5	--	3,364.3	577.4	13,741.3	310.9	154.3
Average price	Dollars/kilogram	.382	.380	.339	--	.355	.402	.390	.356	.339
Price index	NA	99.47	104.39	88.97	NA	93.68	93.48	98.23	81.65	94.42
Market share	Percent	2.8	.5	--	--	3.2	.9	12.0	4.0	1.6
Israel:										
Quantity	1,000 kilograms	343,304	116,828	29,584	--	34,413	14,517	128,332	5,459	14,171
Value	$1,000	121,588.1	40,367.0	10,952.2	--	12,568.0	5,568.4	45,591.1	1,799.6	4,741.9
Average price	Dollars/kilogram	.354	.345	.370	--	.365	.383	.355	.329	.334
Price index	NA	92.18	94.78	97.11	NA	95.30	89.06	89.42	75.45	93.03
Market share	Percent	18.1	22.1	5.7	--	12.1	9.0	39.8	23.3	50.9

See notes at end of table.

Continued--

Table 1--Selected information on EC imports of oranges, by member country, 1978-80 average (continued) 1/, 2/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
Egypt:										
Quantity	1,000 kilograms	5,485	232	1,397	--	1,473	--	2,384	--	--
Value	$1,000	2,096.1	96.7	504.4	--	582.4	--	912.4	--	--
Average price	Dollars/kilogram	.382	.416	.361	--	.395	--	.382	--	--
Price index	NA	99.47	114.28	94.75	NA	103.13	NA	96.22	NA	NA
Market share	Percent	.3	--	.2	--	.5	--	.7	--	--
Mozambique:										
Quantity	1,000 kilograms	280	--	128	--	--	2	150	--	--
Value	$1,000	148.5	--	62.2	--	--	1.4	85.0	--	--
Average price	Dollars/kilogram	.530	--	.485	--	--	.700	.566	--	--
Price index	NA	138.02	NA	127.29	NA	NA	162.79	142.56	NA	NA
Market share	Percent	--	--	--	--	--	--	--	--	--
Zimbabwe:										
Quantity	1,000 kilograms	822	165	200	--	209	88	156	--	4
Value	$1,000	432.9	89.6	103.5	--	110.0	44.5	83.5	--	1.9
Average price	Dollars/kilogram	.526	.543	.517	--	.526	.505	.535	--	.475
Price index	NA	136.97	149.17	136.69	NA	137.33	117.44	134.76	NA	132.31
Market share	Percent	--	--	--	--	.1	--	--	--	--
South Africa:										
Quantity	1,000 kilograms	158,165	31,684	47,985	--	17,935	18,166	40,983	166	1,245
Value	$1,000	79,529.5	15,444.5	23,338.8	--	8,896.1	9,160.1	22,027.3	76.1	586.6
Average price	Dollars/kilogram	.502	.487	.486	--	.496	.504	.537	.458	.471
Price index	NA	133.72	133.79	127.55	NA	129.50	117.20	135.26	105.04	131.19
Market share	Percent	11.8	8.4	12.1	--	8.6	14.9	19.2	.9	6.3
Swaziland:										
Quantity	1,000 kilograms	2,900	230	466	--	479	537	1,182	--	6
Value	$1,000	1,531.9	112.3	223.0	--	258.7	259.5	674.7	--	3.7
Average price	Dollars/kilogram	.528	.488	.478	--	.540	.483	.570	--	.616
Price index	NA	137.50	134.06	125.45	NA	140.99	112.32	143.57	NA	171.58
Market share	Percent	.2	--	.1	--	.2	.4	.5	--	--
United States:										
Quantity	1,000 kilograms	42,445	1,692	4,513	--	21,110	8,128	6,538	81	382
Value	$1,000	21,931.4	851.5	2,101.0	--	10,888.4	4,605.4	3,262.3	37.1	185.7
Average price	Dollars/kilogram	.516	.503	.465	--	.515	.566	.498	.458	.486
Price index	NA	134.37	138.18	122.04	NA	134.46	131.62	125.44	105.04	135.37
Market share	Percent	3.2	.4	1.0	--	10.5	7.4	2.8	.4	1.9

See notes at end of table.

Continued--

Table 1--Selected information on EC imports of oranges, by member country, 1978-80 average (continued) 1/, 2/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
Australia:										
Quantity	1,000 kilograms	1,977	68	371	--	966	528	43	--	--
Value	$1,000	892.1	31.8	171.6	--	444.8	225.9	17.9	--	--
Average price	Dollars/kilogram	.451	.467	.462	--	.460	.427	.416	--	--
Price index	NA	117.44	128.29	121.25	NA	120.10	99.30	104.78	NA	NA
Market share	Percent	.1	--	--	--	.4	.3	--	--	--
Rest of world:										
Quantity	1,000 kilograms	3,245	455	764	--	1,290	266	386	12	72
Value	$1,000	1,266.7	199.1	291.0	--	458.9	118.9	161.1	6.8	30.9
Average price	Dollars/kilogram	.390	.437	.380	--	.355	.446	.417	.566	.429
Price index	NA	101.56	120.05	99.73	NA	92.68	103.72	105.03	129.81	119.49
Market share	Percent	.1	.1	.1	--	.4	.1	.1	--	.3
World:										
Quantity	1,000 kilograms	1,745,324	498,646	502,959	--	269,677	142,729	287,740	17,664	25,908
Value	$1,000	670,284.4	181,990.4	192,100.7	--	103,385.5	61,472.7	114,324.7	7,706.0	9,304.5
Average price	Dollars/kilogram	.384	.364	.381	--	.383	.430	.397	.436	.359

NA = Not applicable.
-- = Nil or negligible.

1/ Average price at c.i.f. (cost, insurance, and freight included) entry, converted from ECU to U.S. dollars using the following ratios: 1978--1:1.274; 1979--1:1.371; 1980--1:1.392. Market shares are based on value.
2/ Data are for navels, shamoutis, valencias, and similar varieties. Blood and other minor varieties are excluded.

Source: (5).

Spain is the dominant supplier of oranges to the EC, providing 44 percent of its import requirements in 1978-80. Israel was the second major source with an import share of 20 percent. The market shares of other major suppliers were: Morocco, 13 percent; South Africa, 9 percent; Cyprus, 2.9 percent; and the United States, 2.4 percent. These top six suppliers provided 91 percent of EC import requirements for the principal orange varieties. Italy, the primary producer of oranges within the EC, shipped only 0.5 percent of the import supply of these varieties, less than that provided by Greece. Italy exported predominately blood and semi-blood varieties and, when these are considered, Italy's share of the EC import market was 2.7 percent.

Imports from the United States during 1978-80 averaged 42,000 tons annually with a dutiable value of $22 million. The volume of imports was depressed from previous years because of two consecutive low harvests in the United States. Imports returned to a higher level in 1980 that was consistent with the years prior to 1978 and then dropped again in 1981 in response to a 50-percent increase in average free on board (f.o.b.) prices and a 32-percent appreciation of the U.S. dollar against European currencies. EC importers faced an average price in 1981 which doubled that in 1980.

Seasonality is an important factor in orange marketing. For commercial purposes, the seasons are defined by the availability and characteristics of various orange varieties, by the supplies of competitive fruits, and by the seasonal preference of consumers.

The EC specifies four seasons for the application of different tariff rates to fresh orange imports. These seasons, which are designed to protect EC producers and to provide preferences to certain suppliers, are defined as follows: regular, October 16 to March 31; first transitional, April 1 to April 30; second transitional, May 1 to May 15; and summer, May 16 to October 15. The proportions of orange imports received during these seasons in 1978-80 were: regular, 61 percent; first transitional, 12 percent; second transitional, 5 percent; and summer, 22 percent.

Spain dominates the import market during the regular season. In 1978-80, Spanish oranges accounted for 60 percent of orange imports (table 2). Israel, Morocco, and Cyprus supplied an additional 33 percent of the market. These and other Mediterranean producers enjoy substantial tariff discounts as the result of preferential trade agreements with the EC. The United States has been unable to gain a foothold in this market primarily because of tariff and transportation disadvantages relative to Mediterranean producers.

The transitional season markets (April 1-30 and May 1-15) mark the shift toward later varieties of oranges and toward overseas suppliers. Spain, Israel, Morocco, and Cyprus were still the major suppliers to these markets, but their shares were more

nearly equalized. Both the United States and South Africa appeared as suppliers during these periods.

The Mediterranean producers were far more important during the transitional marketing periods than in the summer market. Between 70 and 80 percent of the offseason shipments from Spain, Morocco, and Israel were concentrated in the April 1 - May 15 period. These data reflect the small volume of late season varieties grown in these countries.

The competitive situation changes during the summer season. It is a season marked by the availability of late varieties (for example, valencias) from Northern Hemisphere producers such as the United States, of winter varieties (for example, navels) from Southern Hemisphere producers such as South Africa, and of many other types of fruits. Per capita orange consumption is at a lower level than during the regular season.

The popularity of oranges as a summer fruit is relatively low in West Germany and Denmark, which import only 9 percent of their annual requirements during the summer. However, Belgium and the Netherlands, with a stronger consumer demand, import 30-35 percent of their requirements during the summer season. These figures also indicate the important role assumed by Dutch auction markets in the redistribution of fruit from summer suppliers such as the United States. Re-exports from the Netherlands amounted to 16 percent of summer imports, but only 7 percent of regular season imports during 1978-80. The United Kingdom and Ireland also exhibited relatively strong summer demand.

The summer market is clearly dominated by South Africa, which earned a 43-percent import market share during 1978-80. The United States ranked second with a share of 11 percent, 25 percent of that of the leader. Summer is the only season when the United States commands a significant part of the EC orange market. The relative positions of the United States and South Africa in the EC market have remained about the same over the past decade. The market shares of other major suppliers to the summer market in 1978-80 were: Morocco, 9 percent; Israel, 7 percent; Brazil, 6 percent; and Spain, 6 percent.

The Netherlands and Belgium are the major EC customers for U.S. oranges. They received 50 percent and 19 percent, respectively, of EC imports from the United States. West Germany and France, which accounted for 57 percent of EC imports, were minor buyers of U.S. oranges. Their direct imports represented only 1.2 percent of EC imports of oranges from the United States.

The summer market is not so heavily dominated by the major suppliers of oranges as are the other seasonal markets. The top three shippers in the summer market accounted for 62.8 percent of the EC's import supply. During the other three shipping periods, the top three suppliers were Spain, Morocco, and Israel. They provided 89.2 percent of import requirements between April 1 and April 30; 83.0 percent between May 1 and

May 15; and 90.1 percent between October 16 and March 31. There is a dramatic drop in market share between the third and fourth suppliers in these latter markets, whereas the summer market is fairly evenly divided between the third and fourth supplier.

Table 2--Oranges: Import prices and share of EC imports, by major suppliers and seasons, 1978-80 1/

Season and supplier	Price 2/	Share 3/
	Cents	Percent
April 1 to April 30:		
Cyprus	17.3	6.0
Israel	17.8	31.5
Morocco	18.1	25.0
Spain	18.7	33.1
Egypt	18.7	.7
May 1 to May 15:		
Cyprus	18.7	6.7
Israel	18.8	27.2
Morocco	19.2	31.1
Spain	19.4	25.9
United States	19.4	2.6
May 16 to October 15:		
Brazil	14.6	8.7
Israel	19.3	7.3
Spain	20.3	6.7
South Africa	23.8	39.8
United States	24.6	10.3
October 16 to March 31:		
Greece	15.6	1.3
Israel	16.4	21.0
Cyprus	16.5	1.8
Morocco	16.6	9.7
Spain	17.8	60.4

1/ Seasons correspond to the periods utilized in the seasonal tariff scheme of the EC.

2/ Prices are average unit value of imports, c.i.f port of entry, plus applicable tariff. Converted at 1 ECU = $1.352.

3/ Volume market share.

Sources: Average unit values are calculated from (5), and tariff values, from (6).

Import Prices

A comparison of import prices from different suppliers does not adequately explain the market shares observed in 1978-80 (table 2). The existence of different prices and market shares which are sometimes greater when prices are higher reflects variations in the quality mix and time pattern of shipments, differences in terms of sale, and preferences for certain suppliers.

The peak season market for oranges is considered to be October 16 to March 31. This is the period of maximum production in Italy and France and, consequently, the period of maximum tariff protection. Spain dominated this market in 1978-80 with a share of 60 percent, even though its duty-paid price was 7-14 percent above that of the next four leading suppliers. Imports from Spain were priced 5 percent below those from Italy and 34 percent below those from France, the only EC producers of oranges in 1978-80.

A similar pattern held in the summer market, May 16 to October 15. South Africa gained 40 percent of the market, although its price was higher than five other leading suppliers. The United States was the second major source for this market, and its price exceeded that of every other major supplier. Morocco was an important shipper in the early spring market, yet its average price ranked third from the lowest.

Israel's relative market share was inversely related to its relative prices. Israeli orange prices were the second lowest of 11 major competitors in each of the four EC shipping periods. Israel achieved a second-place share in each of the periods except for the summer season when it slipped to fourth place.

U.S. prices were high in the EC market during the 1978-80 period. In the summer market, the weighted-average duty-paid price for orange imports from all sources was 22.0 cents per pound. The U.S. price averaged 24.6 cents, 12 percent above the average. Other prices in the market included: Brazil, 14.6 cents; Israel, 19.3 cents; Spain, 20.3 cents; and South Africa, 23.8 cents. During the October 16 to March 31 season, U.S. prices averaged 23.6 cents as compared with Israel at 16.4 cents and Spain at 17.8 cents.

The U.S. price pattern varied among EC member countries. Imports from the United States averaged 24.8 cents per pound in the Netherlands during the summer season and accounted for 19 percent of the market. U.S. prices were somewhat higher in Belgium than in the Netherlands, and the U.S. market share was 16 percent. In both these countries, U.S. prices were considerably above the average import price reported for oranges.

U.S. prices in France and West Germany were lower than in neighboring countries and very close to the price level of all orange imports. Nevertheless, U.S. oranges accounted for only 4 percent of the market. In the United Kingdom, prices helped the United States earn a market share of 8 percent.

The seasonal statistics reported by the EC obscure differences in the timing patterns of imports. Most oranges from South Africa and the United States are received after Spanish supplies have diminished. In the early summer season, prices are influenced by Spanish suppliers and the demand characteristics of mid- and late spring. Later summer season prices are influenced by suppliers from South Africa and the United States, other producers, and the availability of other summer fruits.

Consequently, average summer season import prices are not strictly comparable, even allowing for quality differentials. The average price for Spanish imports is heavily influenced by early summer market conditions, whereas prices for imports from the United States and South Africa reflect late summer market conditions--for example, the availability of summer fruits.

Variations in market services offered by suppliers also cause differences in market prices. Such services may include promotional assistance, favorable credit terms, or exclusive distribution arrangements. (These factors are discussed more fully in the section on "Impact of EC Enlargement.") Related to these phenomena are the trading preferences that emerge between importers and exporters. These preferences developed over time may be more important to the importer than are lower cost purchases from another supplier.

Government Intervention

Government programs for intervening in the production and marketing of oranges vary among countries. The intervention programs for the EC and major producing countries are described in the following section. The EC policy toward the production and marketing of oranges is manifested in four programs:

- The protection of internal producers (Italy and France) from excessive external competition through a system of seasonal tariffs.
- The maintenance of acceptable producer prices by a reference price system and by subsidy payments for oranges diverted to processing.
- The encouragement of export marketing by the payment of subsidies for the export of oranges to other EC countries and to third countries.
- The improvement of production and marketing efficiency through subsidies for varietal improvements or for modernizing of packing and storage facilities.

The common external tariff is designed to discourage imports when Italian and French production is highest. Accordingly, tariffs reach the maximum level during the regular season and then decline to their minimum during the summer season. Tariffs are applied against the c.i.f. (cost, insurance, and freight included) value of imports at the EC port of entry. The tariff schedule applied during the period of this study was:

Period	Tariff rate
	Percent
April 1-April 30	13
May 1-May 15	6
May 16-October 15	4
October 16-March 31	20

The EC negotiated a series of exceptions to this schedule for a variety of economic and political reasons. These exceptions benefited Mediterranean producers primarily, at the expense of other suppliers. Other favorable arrangements were made under the Lomé Convention, but they had little impact on orange imports. The United States and other producers argue that such exceptions violate the trade preferences negotiated under the General Agreement on Tariffs and Trade (GATT).

Table 3 shows the effect of these exceptions on 1978 tariff rates and gives the net value of the rates after they have been adjusted by the individual preferences granted to major orange suppliers. The 20-percent tariff during the regular season clearly puts the United States at a competitive disadvantage in comparison with other major Northern Hemisphere producers. The other important producers without tariff preferences are in the Southern Hemisphere (for example, South Africa, Brazil, and Argentina), and they use their winter production to serve the low-tariff summer market in the EC. The competitive imbalance between Spain and the United States during the regular season will become more pronounced after Spain enters the EC and its net tariff of 12 percent drops to zero.

During the summer season, the United States and South Africa compete on an equal footing with respect to the tariff. However, late varieties produced in Mediterranean countries still have a small tariff edge.

The average duty-paid value of oranges imported by the EC in 1978-80 was $719 million per year. This value included duties of approximately $47 million or 7 percent of c.i.f value. Consumer prices were probably increased by at least this amount because wholesale and retail markups are customarily based on landed costs. If the tariff rate applied to Spain had been zero (the post-enlargement case) and if other market shares had remained the same, the duty collected would have dropped to $17.5 million and the weighted average tariff rate to 2.6 percent.

It is not clear that tariffs have benefited Italy. They may have protected the domestic market where fresh orange consumption increased by about one-third during the seventies. However, the tariffs apparently did not encourage

exports to other EC countries between 1969-71 and 1978-80 (for all orange varieties). The Italian price for popular varieties during the regular season averaged 16.7 cents per pound, well below the duty paid price for Spain, 17.8 cents, and was competitive with Morocco, 16.6 cents, and with Israel, 16.4 cents. Although the tariff prevented major competitors from underselling Italy, it did not stimulate Italian exports. The lack of export expansion probably resulted from the ease of serving an expanding domestic market with a mix of varieties and qualities that was more compatible with that market than with markets in other EC countries.

A second important element of EC citrus policy is the reference price program. The EC determines a reference price for oranges yearly that is based on representative market prices for the past 3 years. When import entry prices fall below the reference price, a countervailing duty is levied against subsequent imports from the offending country until prices are equalized. Levies have been assessed against Spain, Israel, Morocco, Greece, and other suppliers in past years. Reference prices averaged 12.8 cents per pound in 1978-80, well below the average import price of 16 cents. Reference prices were established for shipments from December through May and had little impact on imports from the United States.

Table 3--"Net" EC tariff on sweet oranges according to season and principal supplier, 1978 1/

Supplier	Season			
	Apr. 1-30	May 1-15	May 16- Oct. 15	Oct. 16- Mar. 31
	Percent of ad valorem			
Greece, Italy	0	0	0	0
Morocco, Tunisia, Algeria	2.6	1.8	.8	4.0
Israel, Cyprus, Egypt, Turkey	5.2	2.4	1.6	8.0
Spain	7.8	3.6	2.4	12.0
United States, South Africa, Brazil	13.0	6.0	4.0	20.0

1/ The net rate is the value obtained after reducing the EC tariff for oranges by the exceptions granted to suppliers under various agreements which were effective in 1978. Subsequent negotiations are changing these rates.

Source: (6).

The reference price program periodically increases import prices above the level they would otherwise reach for certain suppliers under the tariff structure alone. Presumably, this program leads to higher average consumer prices. The reference price system protects domestic producers from foreign competition at prices below the reference price. However, very strict enforcement of phytosanitary regulations effectively insulates Italy from foreign competition at each price level.

The EC has adopted other price programs in addition to the reference price system to protect grower income. For the 1981/82 crop year, the EC determined a buying-in price of approximately 10.6 cents per pound at which fresh oranges could be witheld from the market and diverted to other uses. The growers of processing oranges were also assured of prices of 4-7 cents per pound by granting processors, who paid these prices, an offsetting subsidy of 2-5 cents per pound. This program provided oranges for processing at an effective price of 2 cents per pound or $44 per metric ton (12, 1982 issue).

EC policy also provides export subsidies for the export of oranges to non-EC countries and penetration premiums to encourage exports to other EC countries. In 1981/82, the export subsidy paid on Italian and Greek exports to third countries ranged between 2.5 and 4.5 cents per pound depending on variety and quality, and the penetration premium was 5-6 cents per pound. The penetration premium program undoubtedly helped divert some Italian exports toward the EC. However, the impact was not large. Despite the subsidy payments Italy's aggregate export of oranges (all varieties) dropped between 1969-71 and 1978-80. Exports to third countries declined from 102,000 tons to 62,000 tons, and exports to other EC countries increased from 48,000 tons to 53,000 tons per year. The estimated average annual cost of the export subsidy and penetration premium program applied to Italy in 1978-80 was $10 million.

Greece paid subsidies for the export of oranges prior to its entry into the EC. The export subsidy for citrus fruits ranged from 3.5 to 4.5 cents per pound in 1980/81 depending on variety and quality (21, 1981 issue). The national subsidy scheme facilitated a 66-percent increase in Greek orange exports between 1969-71 and 1978-80. The EC subsidy scheme had been applied to Greece for too short a period to judge its results in 1982.

Subsidies are paid by the EC and national governments for planting improved varieties and constructing or modernizing facilities. Projects have been established in both Italy and Corsica. These programs include payments of over $1,000 per hectare for reconversions of orange groves. Grants can be obtained to cover half of the cost of approved construction or modernization of facilities.

Goals for improving the Italian industry in the midseventies included varietal changes on 42,000 hectares. Funding for facilities was directed toward packing, storage, and

distribution facilities and toward processing plants. Aggregate production and price data since the program began are inadequate to measure economic benefits.

Other Producing Countries. Government support for producing and marketing oranges varies considerably among the major suppliers to the EC. Intervention in Spain and Greece is somewhat similar to that within the EC and involves various cultural and marketing assistance programs. The focus in Israel and South Africa is more on the organizational interaction of the production and marketing system. In the United States, Government intervention is limited to general programs such as promotional assistance through the USDA's Foreign Agricultural Service, research on pre- and post-harvest problems, and marketing order programs.

Spain. Spain's policy toward orange production and marketing is part of a general program directed at the entire citrus sector. The Government does not control the planting, cultivation, or production of oranges. Its efforts are directed instead toward helping the industry to become more productive or to avert a decline. Spanish policy involves the following:

- Assistance for various pest control programs, particularly against Mediterranean and white fruit flies;
- Financial allowances for replacement of diseased trees to combat tristeza;
- Subsidies for fuel, fertilizer, and certain types of machinery and equipment;
- Low-interest loans for certain structural improvements such as irrigation facilities;
- Price support for diverting oranges to processing use;
- Provision of tax rebates for oranges exported; and
- Support for export marketing through a citrus coordinating committee which uses tax rebate funds for market promotion.

Processing subsidies are low relative to fresh market prices, but do provide an outlet for surplus oranges which would otherwise generate no grower return. Growers received approximately 4.8 cents per pound for a predetermined quantity of fresh oranges diverted from the fresh market in 1980. Of this amount, 2.7 cents (minimum) was paid by the processor and 2.1 by Government subsidy. Fresh market oranges were priced "on the tree" at approximately 8.5 cents per pound. The processing subsidy is below the level that would stimulate surplus production of fresh market varieties.

Export subsidies are paid through a rebate on local taxes for oranges shipped to export markets. The rebate in 1978/79 was 5.5 percent. Based on estimated growing and marketing costs

for that year, the rebate nearly equaled $20 per ton. This subsidy offsets almost half the EC tariff during Spain's principal export period.

Not all the tax rebate is paid to the exporter. About 20 percent is used to support the activities of Spain's Citrus Coordinating Committee. This committee was established by Government decree in 1972 and is composed of grower, exporter, and Government members. It is responsible for promoting Spanish fresh citrus in export markets. The Committee is technically paid for by exporters through tax rebates rather than by the Government through treasury funds. In this way, the Committee's operation is similar to U.S. marketing orders.

During 1978-80, the Committee spent an average of $3.5 million per year to promote Spanish citrus, almost entirely within the EC. The common market "Spania" is heavily supported in these promotional efforts.

Greece. Governmental intervention in Greece is geared to encouraging the growth of marketable orange varieties and to providing acceptable minimum prices to growers. In the midseventies, this program involved a payment of $576 per hectare for conversion to exportable varieties and an annual income supplement of about $84 per hectare until the planted trees reached bearing age. Producers were paid 4.7 cents per pound for export-quality fruit on the tree, of which the buyer paid 3.1 cents and the Government paid 1.6 cents through an export subsidy. The Government adjusted the level of subsidy according to market conditions.

Greece's orange exports had duty-free access to EC markets. However, its exports to that market remained minor and actually declined between 1969-71 and 1978-80. Therefore, its policies had virtually no impact on EC trade in oranges.

Morocco. Government policy in Morocco involves control of production and marketing. In past years, the Government expropriated large landholdings which included some productive orange groves. Since 1972, policy has been directed toward changing the varietal mix of oranges to those more highly favored in European markets. The success of this policy is not yet determined as exports to the EC dropped between 1969-71 and 1978-80 (all varieties). However, Morocco's presence in the later season markets suggests some success.

Growers have received subsidies for varietal conversions, but have not received guaranteed minimum prices. In effect, prices are controlled within the constraints of market conditions by the Office de Commercialization et d'Exportation (OCE), which is responsible for citrus marketing.

The OCE is a quasi-governmental organization and an instrument of export policy. It has banned the export of certain orange varieties to enhance Morocco's reputation for quality fruit (hence, the reduction in exports previously noted). The OCE

has linked its export development program with Government assistance to growers planting desired varieties. For example, growers were allowed 10-year credits at 6 percent interest to cover 80 percent of the costs of planting approved varieties. A unique feature of OCE's operation is its complete or partial ownership of key wholesaler/importer organizations in France.

Israel. Government policy toward citrus is embedded in a comprehensive national plan for agricultural development, production, and marketing. The primary policy instrument for citrus is the Citrus Marketing Board of Israel (CMBI). Israel places considerably less reliance on direct grower subsidies than do other Mediterranean countries. For the first time in many years, growers received a 20-percent subsidy in 1975 for diverting surplus oranges to processing. This policy was unpopular with growers who insisted that processors were capable of paying higher prices. The program ended with the 1975 season. However, the Government continues to set minimum prices for processing oranges.

The essential difference between policy in Israel (and also South Africa) and that in the EC, Spain, and Greece is its focus on efficient market organization rather than on subsidy schemes. CMBI has exclusive responsibility for promoting domestic and export sales and for arranging transportation. It advises farmers and their cooperatives on horticultural, harvesting, and packing procedures. Because of its exclusive sales control, CMBI is in a position to literally force structural changes. The Citrus Coordinating Committee of Spain, in contrast, lacks such leverage because it cannot exercise complete sales control.

South Africa. Citrus policy in South Africa is similar to that in Israel. The objective is to develop a strong export-oriented industry which is profitable for growers and shippers. The Citrus Marketing Board is the primary instrument for this policy. Its responsibility is to develop a citrus marketing program which is implemented by the South African Citrus Exchange. Funds for operating the Board and the Exchange are derived from an assessment against each carton of citrus sold. These funds can be used only in direct support of marketing activities. For example, they are used for promoting the "Outspan" brand of oranges in export markets.

The Exchange also conducts research on diseases and cultural practices. However, these programs must be financed by voluntary grower contributions because of the legal restriction on the use of assessment funds (19).

Production and Exports

This section describes the orange production and marketing structure of the principal producing countries as a first step in evaluating potential responses to EC enlargement. These structures pertain to all varieties of sweet oranges.

Table 4 presents production and marketing data for the nine countries which provided 91.4 percent of the EC's sweet orange imports in 1978-80. Annual production of oranges in the nine countries averaged 24.4 million tons per year in 1978-80, which was 8.5 million tons more than in 1969-71. However, virtually all this growth occurred in Brazil and the United States. Aggregate production in the other seven countries was almost unchanged.

Use of oranges differs markedly between the United States and Brazil and the remaining seven producing countries. The United States allocated 19 percent of its production to fresh markets in 1978-80; Brazil allocated 37 percent; and the other countries allocated 83 percent.

Fresh market use in 1978-80 averaged 10 million tons per year, an increase of 33 percent from 1969-71. Most of this increase was in Brazil. Brazil and the United States accounted for about 50 percent of the fresh marketings in the nine producing countries. Fresh use in the remaining seven countries was up slightly (6 percent), and processing use was down almost 20 percent. Processing activities in the latter countries are residual to fresh market use.

All the increase in fresh orange marketing was directed toward domestic markets. The nine countries reported export levels in 1978-80 virtually unchanged from 1969-71. However, trends differed among countries. South African exports rose by 147,000 tons, whereas production and domestic use declined. The United States increased exports by 118,000 tons, and exports from Greece expanded by 66,000 tons. Spain's exports dropped 210,000 tons whereas domestic use of fresh oranges increased by 140,000 tons. Exports from Israel, Cyprus, and Italy also declined.

Countries that are highly dependent on the EC market and that are not primary suppliers are vulnerable to changes in EC importing patterns. Israel and Cyprus are examples. Israel exported over 90 percent of its fresh market oranges in 1978-80, of which almost 60 percent went to the EC. These exports accounted for over 50 percent of Israel's fresh marketings, but only 18 percent of the EC's import requirements. Cyprus shipped almost 50 percent of its fresh oranges to the EC, but achieved a very small share of the market.

South Africa is vulnerable to shifts in EC trade preferences because approximately 48 percent of its fresh shipments are destined for EC markets. However, its position is partially protected by its importance as a major supplier (40 percent of the market share) to the summer market, a position maintained without special tariff considerations.

Spain is in a unique position. Over 90 percent of its orange exports are shipped to the EC; however, the EC is highly dependent on Spain for its supply of winter oranges.

Table 4--Production, utilization, and exports of sweet oranges by selected producers, 1969-71 and 1978-80 crop year averages 1/

Country and year	Production	Utilized as fresh oranges	Exports: To all destinations: Quantity	Exports: To all destinations: Share of fresh use	Exports: EC 2/: Quantity	Exports: EC 2/: Share of exports
	1,000 metric tons			Percent	1,000 metric tons	Percent
Spain:						
1969-71	1,836	1,630	1,033	63.4	904	87.5
1978-80	1,685	1,560	823	52.8	714	86.7
Israel:						
1969-71	1,053	688	672	97.7	480	71.4
1978-80	868	644	595	92.4	352	59.2
Morocco:						
1969-71	650	593	482	81.3	299	62.0
1978-80	691	629	485	77.1	250	51.6
South Africa:						
1969-71	580	394	216	54.8	167	77.3
1978-80	571	433	363	83.8	216	59.4
Cyprus:						
1969-71	141	123	109	88.6	50	45.9
1978-80	119	104	84	80.8	51	60.7
United States:						
1969-71	7,327	1,722	274	15.9	32	11.7
1978-80	9,725	1,824	392	21.5	43	11.0
Brazil:						
1969-71	2,514	1,016	56	5.5	43	76.8
1978-80	8,607	3,167	77	2.4	46	59.7
Greece:						
1969-71	397	319	100	31.4	18	18.0
1978-80	447	356	166	46.6	14	8.4
Italy:						
1969-71	1,399	1,056	150	14.2	48	32.0
1978-80	1,711	1,355	115	8.5	53	46.3
Total:						
1969-71	15,897	7,541	3,092	41.0	2,041	66.0
1978-80	24,424	10,072	3,100	30.8	1,739	56.1
Change:						
Quantity	8,527	2,531	8	NA	-302	NA
Percent	53.6	33.6	0	NA	-14.8	NA

NA = Not applicable.

1/ Crop years vary between suppliers, but usually refer to marketing period October-June in Northern Hemisphere and April-December in Southern Hemisphere.

2/ Figures for 1978-80 are estimates based on analysis of partial data, market shares for all citrus, or calendar year market shares reported by NIMEXE. (NIMEXE stands for Nomenclature of Goods for the External Trade Statistics of the Community and Statistics of Trade Between Member States.) Data for 1969-71 are as reported by Foreign Agricultural Service.

Source: (21).

Neither can be independent of the other. Furthermore, Spain has a very strong domestic market for fresh oranges which provides some relief from the rigors of export markets.

Brazil is at the other extreme. Only 2 percent of its fresh marketings in 1978-80 found their way to export markets. Domestic consumption increased by 2 million tons while exports grew by 21,000 tons from 1969-71. Over half of Brazil's exports go to the EC, but they play a minor role in the EC's total supply.

Italy's producers are not export-oriented. Less than 10 percent of its fresh market allocation reached export markets in 1978-80. Italy's EC partners took 45-50 percent of the exports, mostly the blood varieties.

The United States shipped about 22 percent of its fresh market oranges to export markets. The EC received only 11 percent of these exports, or about 2.4 percent of U.S. fresh market oranges.

Export dependence changed among the various orange-producing and exporting countries between 1969-71 and 1978-80. Six of the suppliers became less dependent on export markets. South Africa, the United States, and Greece increased their dependence on export markets. Seven countries reduced their dependence on EC markets. Only Italy and Cyprus increased the share of exports directed toward the EC. These circumstances indicate that orange producers developed alternative domestic and export markets as EC consumption declined.

Impact of EC Enlargement

Table 5 presents projections of EC-9 orange imports in 1986. These projections were derived from those made by Sarris (17) for each of the importing countries based on 1979 market shares. The projected levels result from changes in consumer income and the elimination of tariff and nontariff barriers facing Spain, Greece, and Portugal. The separate effect of each of these changes is evaluated (table 5).

Sarris described the theoretical basis and the empirical estimation of the projection models in his report (17). I describe the models and the adaptions made for this study in the appendix.

Other factors, in addition to the removal of tariff and nontariff barriers, will affect post-enlargement trade. These factors include potential policy changes and the ability of Spain to supply additional oranges to the EC.

Projections

I projected EC orange imports in 1986 by applying the percentage changes due to income growth and the tariff effects of enlargement, as calculated by Sarris (17), to the average annual value of EC imports from supplying countries in 1978-80. The results presented in table 5 differ considerably from those projected by Sarris because of differences in base year market shares. These differences are illustrated in table 6. For example, the larger projected shares reported for Italy, Greece, Morocco, and the United States occur because their 1978-80

market shares were substantially larger than in 1979. Conversely, the lower share projected for Spain and Israel occurs because their 1978-80 averages were below those in 1979. However, the value of total imports is only 1.5 percent below the value projected by Sarris, reflecting the slightly lower average value of imports in 1978-80 as compared with 1979.

The difference in the 1986 projections demonstrates the influence that base-year market shares have on projection results. For example, the large differences between the projections for Morocco and the United States are explained by differences between the base periods. These differences should not be of great concern because they are within the range of year-to-year variations in imports.

Table 5--Value of EC imports of oranges from selected countries, 1978-80 average and projected 1986

Country	Base year 1978-80: Value 2/	Share	Changes caused by -- Income 1/: Amount 2/	Pro-portion	Enlargement: Amount 2/	Pro-portion	1986 projection: Value 2/	Share
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1,000 dollars	Percent	1,000 dollars	Percent	1,000 dollars	Percent	1,000 dollars	Percent
Italy	19,893	2.62	2,869	14.42	-790	-3.47	21,972	2.49
Spain	283,315	37.32	46,605	16.45	31,078	+9.42	360,999	40.88
Greece	4,591	.60	515	11.22	340	6.65	5,446	.62
Morocco	97,686	12.87	16,108	16.49	-5,712	-5.02	108,082	12.24
South Africa	97,629	12.86	11,706	11.99	-5,007	-4.58	104,327	11.82
United States	23,151	3.05	5,420	23.41	-1,534	-5.37	27,037	3.06
Israel	123,845	16.31	13,623	11.00	-4,605	-3.35	132,863	15.05
Rest of world	109,109	14.37	18,396	16.86	-5,153	-4.12	122,252	13.85
Total	759,219	100.00	115,242	15.05	8,517	1.38	882,978	100.00

Note: Percentage totals may not add to 100 because of rounding.

1/ Income changes are those created by income growth without accounting for price effects of eliminating barriers facing Spain and Greece.

2/ Deflated to 1978-80 average. Converted from ECU at average annual exchange rates.

Sources: Col. (1), (5); cols. (2), (7), (8), calculated; cols. (3), (4), (5), (6), computed from (17).

The projections in table 5 conform to the findings reported by Sarris (17) that the removal of tariff and nontariff barriers facing Spain and Greece will have far less impact on trade in oranges than will anticipated income growth. The aggregate changes in market shares for individual suppliers vary because growth rates and income elasticities in the EC countries which they serve also vary. For the EC, the income impact is projected to be $115 million, whereas the enlargement (price) effect is only $9 million.

The relative price effect of enlargement has little influence on the level of 1986 imports. However, it does account for most of the changes in market shares projected for individual countries (table 6). Because these changes are no greater than those in 1978-80, they present few new problems to exporters accustomed to the normal dynamics of the trading system.

A comparison of the Sarris projections with those in table 5 provides a sense of the potential outcomes in 1986, after enlargement.

Spain will benefit most from the combination of economic growth and relaxation of EC barriers. The EC's increase in orange imports from Spain will likely range between $78 million and $112 million, and its market share will increase 3 or 4 percentage points.

Changes in Greek exports to the EC are unlikely to affect the Greek or the EC economies much. Membership in the EC will increase the value of orange imports from Greece modestly. Italy will gain little, if any, in exports to the EC.

The U.S. market share is projected to remain at current levels in 1986. The value of orange imports from the United States is likely to range between $15 and $27 million. The range projected for South Africa is $104-$113 million, and that for Morocco is $83-$104 million. The overall value of EC orange imports is projected to range between $883 and $896 million.

The projection of import demand utilizes the income elasticity parameters estimated for all fresh fruits and nuts imported by EC members between 1966 and 1978. These values may be high for oranges because per capita consumption declined while personal income rose during the past decade. Changes in prices relative to substitute products or shifts in consumer preferences may have offset the positive effect of income growth and led to a decline in per capita orange consumption.

Because of uncertainty about patterns when consumer incomes rise or fall, I made a projection in which the income effect was assumed to be zero. That is, the overall change in imports was confined to the price effects of enlargement. I made projections by adjusting current import levels by the price effect computed by Sarris (17); the results showed a 1.4-percent gain in import values between 1978-80 and 1986.

Projected market shares were less for all supplying countries, except Spain and Greece. Their market shares grew by 3.0 percentage points and 0.04 percentage points, respectively. For Greece, this growth reflected the removal of nontariff barriers only, as the tariff level was already zero. The value of imports from countries other than Greece and Spain declined 3.5 percent. The value of oranges imported from the United States was projected to be $22 million, rather than $27 million, under the assumption of income-induced increases in import demand.

An increase in the c.i.f. value of imports is possible when tariffs are removed in the face of relatively price-inelastic import demand. Consumer prices decrease by the amount of the tariff reduction and stimulate a relatively smaller increase in the quantity of oranges purchased. However, c.i.f. prices do not decrease; thus, revenues increase in proportion to changes in the volume purchased.

Other Considerations

The EC's future trade in oranges could be affected by factors other than income and price. Possible changes in EC policy and the export availability of oranges from Spain are discussed in the following sections.

Table 6--Selected exporters' market share of EC import value of oranges, 1979, 1978-80, and 1986

Country	1979	1978-80	1986 1/	1986 2/
			Percent	
Italy	2.2	2.6	2.1	2.5
Spain	40.4	37.3	44.1	40.9
Morocco	9.8	12.9	9.3	12.2
South Africa	13.8	12.9	12.6	11.8
United States	1.7	3.1	1.7	3.1
Israel	18.1	16.3	16.7	15.1
Rest of world	14.0	14.9	13.5	14.4
Total	100.0	100.0	100.0	100.0

1/ Projections from 1979 base year.
2/ Projections from 1978-80 base year.

Changes in policy. The projected value of orange imports by the EC and the distribution of market shares are based on projected income and price conditions. These conditions include the reduction of tariff and nontariff barriers facing the countries joining the EC; they do not consider changes in the Common Agricultural Policy (CAP) for oranges. Such changes could include modifications in the reference price system, resulting in higher internal prices and levies against imports; revisions in health and sanitary requirements to restrict imports; or the institution of different quota systems. Prospects for such changes are speculative and it is difficult to evaluate their impact.

The extension of export subsidies for oranges to Spain should be considered. Such subsidies are currently offered to Italy and Greece for exports to other EC member countries. Extension to Spain would be costly, but would provide a significant price advantage to Spain relative to other suppliers. The precedent has been established by the payment of subsidies to Greek exporters of oranges. Similar payments to Greek exporters of raisins have seriously disrupted U.S. sales of raisins to the EC.

If the 1981/82 EC export subsidy of 5-6 cents per pound were paid for Spanish exports to other EC member countries in 1986, the cost to the EC treasury would be approximately $115 million (951,000 tons at $121-per-ton subsidy). Spanish prices could be lowered from 18 cents per pound, their estimated 1986 c.i.f. value, to 12.5 cents, if the subsidy were passed forward. This calculation ignores the reductions available by eliminating nontariff barriers as discussed previously. Such a subsidy could disastrously affect competitive suppliers if Spain expanded its production.

The analysis by Josling and Pearson (11) emphasizes the serious budget constraints the EC faces. If projected to 1986, these contraints would seriously reduce the likelihood that such a generous subsidy would be granted without some offsetting form of revenue. The most probable source of revenue would be through a system of higher reference prices which would trigger levies against imports from other suppliers. Higher reference prices would reduce the need for higher subsidies for shipments to other EC members, increase the effective barriers to imports from other countries, and create higher consumer prices. As the major supplier to the EC, Spain would be the principal beneficiary of such a policy, and, as the major competitors during the regular shipping season, Israel and Morocco would be the greatest losers.

Experience through 1982 shows that the EC has ignored potential budget problems and has set even higher farm prices. This pattern provides a legitimate cause for concern about the extension of export subsidies and reference prices to Spain at levels which would disrupt trade patterns far beyond those shown in table 5. Thus, U.S. traders and policymakers should be prepared to develop strategies to counteract the impact of such changes.

Export Supply. Spain should have no problem furnishing the additional volume of oranges required to satisfy the projections in table 5. The added shipments are estimated to be 160,000 tons, based on a c.i.f. price increase of about 10 percent above pre-enlargement levels. The additional shipments are equivalent to 9.5 percent of Spain's 1978-80 average production level. Sufficient irrigated land appears to be available to accommodate such a minor shift in production.

The ultimate response by Spain's orange producers depends on the profitability of orange production relative to other enterprises. The slight decrease in production and the shift to other citrus or other crops during the past 10 years suggests the likelihood of poor returns to orange growing. However, the price benefits of being in the EC, estimated to be 10 percent plus the value of eliminated nontariff barriers and potential subsidies, are likely to maintain orange production at the required levels.

GRAPES

Table grapes vary in popularity among EC member countries. Their per capita consumption is very high in Italy, a producing country, and very low in Denmark, a nonproducing country. Trade patterns are determined partly by the relative perishability of grapes (as compared with oranges, for example) and partly by the availability of late varieties or Southern Hemisphere production.

Structural Aspects of EC Trade

The structure of trade is described by EC import patterns, the prices for imports, the degree and nature of government intervention in production and marketing, and the character of production and exports by the major producing countries.

Imports

Imports are an important, but not dominant, factor in the EC market for table grapes. The EC consumed about 1.7 million tons of fresh grapes annually during 1978-80, of which 500,000 tons (or 30 percent) were imported. Italy and France provided 349,000 tons to their EC partners. Non-EC producers of table grapes supplied 141,000 tons or 8 percent of domestic use (table 7).

Table grape consumption within the EC expanded by 209,000 tons between 1968-70 and 1978-80. Production by EC countries grew by an even greater amount and thereby increased EC table grape exports and reduced imports from third countries by 20,000-30,000 tons.

West Germany is by far the most important market for imported table grapes. Imports averaged 278,000 tons per year during 1978-80 and accounted for 55 percent of EC imports. The importance of West Germany relative to other member countries has been sustained over the years. Ten years earlier, West Germany's table grape imports averaged 238,000 tons or 63 percent of EC imports.

This import record is consistent with West Germany's position as the primary fruit market in the EC. Per capita consumption of fresh deciduous fruit in 1978/79 was 206 pounds, 17 percent

Table 7--Selected information on EC imports of table grapes, by member country, 1978-80 average 1/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
France:										
Quantity	1,000 kilograms	25,515	14,312	NA	58	4,673	4,450	1,835	99	87
Value	$1,000	18,457.6	9,656.8	NA	42.1	3,299.2	3,688.2	1,635.4	69.5	66.5
Average price	Dollars/kilogram	.723	.674	NA	.725	.706	.826	.891	.702	.764
Price index	NA	102.84	113.46	NA	61.70	97.64	102.22	81.00	71.48	104.94
Market share	Percent	5.2	5.8	NA	1.7	13.9	14.8	2.4	3.4	1.1
Belgium/Luxembourg:										
Quantity	1,000 kilograms	1,172	329	469	2/	296	NA	77	--	--
Value	$1,000	2,503.9	952.6	966.3	1.4	362.7	NA	220.7	--	--
Average price	Dollars/kilogram	2.136	2.895	2.060	n.a.	1.225	NA	2.866	--	--
Price index	NA	303.84	487.37	292.61	NA	169.43	NA	260.54	NA	NA
Market share	Percent	.7	.5	1.5	n.a.	1.5	NA	.3	--	--
Netherlands:										
Quantity	1,000 kilograms	3,037	1,849	119	23	NA	189	793	15	49
Value	$1,000	5,378.3	3,290.3	243.0	80.5	NA	341.5	1,318.7	21.5	82.9
Average price	Dollars/kilogram	1.770	1.779	2.042	3.500	NA	1.806	1.662	1.433	1.691
Price index	NA	251.77	299.49	290.05	297.87	NA	222.96	151.09	145.92	232.28
Market share	Percent	1.5	1.9	.3	3.2	NA	1.3	1.9	1.0	1.4
West Germany:										
Quantity	1,000 kilograms	7,195	NA	102	9	6,393	87	68	--	536
Value	$1,000	5,327.4	NA	153.6	20.2	4,146.2	77.1	59.2	--	871.0
Average price	Dollars/kilogram	.740	NA	1.505	2.244	.648	.886	.870	--	1.625
Price index	NA	105.26	NA	213.77	190.97	89.62	109.38	79.09	NA	223.21
Market share	Percent	1.5	NA	.2	.8	17.5	.3	--	--	15.6
Italy:										
Quantity	1,000 kilograms	323,538	195,884	78,944	NA	9,718	22,682	11,561	148	4,599
Value	$1,000	189,337.5	99,982.9	52,460.0	NA	6,195.1	16,274.1	11,581.5	73.5	2,770.4
Average price	Dollars/kilogram	.585	.510	.664	NA	.637	.717	1.001	.496	.602
Price index	NA	83.21	85.85	94.31	NA	88.10	88.51	91.00	50.50	82.69
Market share	Percent	53.5	60.5	83.9	NA	26.2	65.5	17.1	3.6	49.6
United Kingdom:										
Quantity	1,000 kilograms	1,001	10	7	--	165	6	NA	809	6
Value	$1,000	1,475.4	19.4	5.1	--	275.3	3.7	NA	1,163.2	8.7
Average price	Dollars/kilogram	1.473	1.940	.728	--	1.668	.616	NA	1.437	1.450
Price index	NA	209.53	326.59	103.40	NA	230.70	76.04	NA	146.33	199.17
Market share	Percent	.4	--	--	--	1.1	--	NA	57.5	.1

See notes at end of table.

Continued--

Table 7--Selected information on EC imports of table grapes, by member country, 1978-80 average (continued) 1/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
Colombia:										
Quantity	1,000 kilograms	33	--	15	--	13	4	--	--	--
Value	$1,000	52.1	--	35.6	--	8.7	7.8	--	--	--
Average price	Dollars/kilogram	1.578	--	2.373	--	.669	1.950	--	--	--
Price index	NA	224.46	NA	337.07	NA	92.53	240.74	NA	NA	NA
Market share	Percent	--	--	--	--	--	--	--	--	--
Brazil:										
Quantity	1,000 kilograms	31	8	4	--	19	--	--	--	1
Value	$1,000	64.0	18.3	9.6	--	34.7	--	--	--	1.4
Average price	Dollars/kilogram	2.064	2.287	2.400	--	1.826	--	--	--	1.400
Price index	NA	293.59	385.01	340.90	NA	252.55	NA	NA	NA	192.30
Market share	Percent	--	--	--	--	.1	--	--	--	--
Chile:										
Quantity	1,000 kilograms	2,757	911	163	502	804	103	272	--	2
Value	$1,000	4,376.9	1,240.3	366.1	908.3	1,154.1	182.8	521.4	--	3.8
Average price	Dollars/kilogram	1.587	1.361	2.246	1.809	1.435	1.774	1.916	--	1.900
Price index	NA	225.74	229.12	319.03	153.95	198.47	219.01	174.18	NA	260.98
Market share	Percent	1.2	.7	.5	36.9	4.8	.7	.7	--	--
Argentina:										
Quantity	1,000 kilograms	160	24	9	--	75	--	10	--	42
Value	$1,000	238.0	37.6	20.5	--	109.7	--	12.4	--	57.8
Average price	Dollars/kilogram	1.487	1.566	2.277	--	1.462	--	1.240	--	1.376
Price index	NA	211.52	263.63	323.43	NA	202.21	NA	112.72	NA	189.01
Market share	Percent	--	--	--	--	.4	--	--	--	1.0
Cyprus:										
Quantity	1,000 kilograms	12,811	221	2/	--	93	--	12,424	27	46
Value	$1,000	14,658.6	296.6	.5	--	114.6	--	14,164.3	20.5	62.0
Average price	Dollars/kilogram	1.144	1.342	--	--	1.232	--	1.140	.759	1.347
Price index	NA	162.73	225.92	NA	NA	170.40	NA	103.63	77.29	185.02
Market share	Percent	4.1	.1	--	--	.4	--	21.0	1.0	1.1
Israel:										
Quantity	1,000 kilograms	1,116	110	3	--	13	6	942	11	31
Value	$1,000	2,878.3	160.3	6.4	--	68.4	13.0	2,543.2	28.7	58.4
Average price	Dollars/kilogram	2.579	1.457	2.133	--	5.261	2.166	2.699	2.609	1.883
Price index	NA	366.85	245.28	302.98	NA	727.66	267.40	245.36	265.68	258.65
Market share	Percent	.8	--	--	--	.2	--	3.7	1.4	1.0

See notes at end of table.

Continued--

Table 7--Selected information on EC imports of table grapes, by member country, 1978-80 average (continued) 1/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
Spain:										
Quantity	1,000 kilograms	53,621	16,687	8,546	1,450	2,337	159	21,901	853	1,688
Value	$1,000	42,191.9	12,035.4	7,848.9	1,301.4	1,203.5	163.5	18,082.5	529.6	1,027.3
Average price	Dollars/kilogram	.786	.721	.918	.897	.514	1.028	.825	.620	.608
Price index	NA	111.80	121.38	130.39	76.34	71.09	126.91	76.00	63.13	83.51
Market share	Percent	11.9	7.2	12.5	52.9	5.1	.6	26.8	26.2	18.4
Greece:										
Quantity	1,000 kilograms	38,561	30,313	72	--	5,532	355	2,218	--	71
Value	$1,000	17,412.9	12,040.0	40.3	--	3,169.0	204.2	1,913.6	--	45.7
Average price	Dollars/kilogram	.451	.397	.559	--	.572	.575	.862	--	.643
Price index	NA	64.15	66.83	79.40	NA	79.11	70.98	78.36	NA	88.32
Market share	Percent	4.9	7.2	--	--	13.4	.8	2.8	--	.8
Turkey:										
Quantity	1,000 kilograms	1,728	1,507	1	--	141	--	79	--	--
Value	$1,000	889.7	750.8	2.7	--	59.9	--	76.2	--	--
Average price	Dollars/kilogram	.514	.498	2.700	--	.424	--	.964	--	--
Price index	NA	73.11	83.83	383.52	NA	58.64	NA	87.63	NA	NA
Market share	Percent	.2	.4	--	--	.2	--	.1	--	--
Bulgaria:										
Quantity	1,000 kilograms	663	616	--	--	5	--	--	--	43
Value	$1,000	207.3	194.7	--	--	1.4	--	--	--	11.2
Average price	Dollars/kilogram	.312	.316	--	--	.280	--	--	--	.260
Price index	NA	44.38	53.19	NA	NA	38.72	NA	NA	NA	35.71
Market share	Percent	--	.1	--	--	--	--	--	--	.2
South Africa:										
Quantity	1,000 kilograms	26,088	13,377	180	42	1,854	2,567	7,854	--	214
Value	$1,000	44,001.1	23,008.8	249.5	90.4	2,948.1	3,801.0	13,545.9	--	357.4
Average price	Dollars/kilogram	1.686	1.720	1.386	2.152	1.590	1.480	1.724	--	1.670
Price index	NA	239.82	289.56	196.87	183.14	219.91	182.71	156.72	NA	229.39
Market share	Percent	12.4	13.9	.3	3.6	12.4	15.2	20.0	--	6.4
United States:										
Quantity	1,000 kilograms	2,428	902	10	--	301	5	1,044	81	85
Value	$1,000	3,046.0	1,026.5	25.5	--	340.8	7.8	1,445.5	98.2	101.7
Average price	Dollars/kilogram	1.254	1.138	2.550	--	1.132	1.560	1.384	1.212	1.196
Price index	NA	178.37	191.58	362.21	NA	156.56	192.59	125.81	123.42	164.28
Market share	Percent	8	6	--	--	1.4	--	2.1	4.8	1.8

See notes at end of table.

Continued--

Table 7--Selected information on EC imports of table grapes, by member country, 1978-80 average (continued) 1/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
Rest of world:										
Quantity	1,000 kilograms	1,073	474	26	4	199	39	156	12	163
Value	$1,000	865.2	282.9	51.4	11.6	99.6	80.0	273.4	14.9	51.7
Average price	Dollars/kilogram	.806	.596	1.976	2.900	.500	2,051	1.752	1.241	.317
Price index	NA	114.65	100.33	280.68	246.80	69.15	253.20	159.27	126.37	43.54
Market share	Percent	.2	.1	--	.4	.4	.3	.4	.7	.9
World:										
Quantity	1,000 kilograms	502,528	277,535	88,670	2,089	32,629	30,651	61,235	2,056	7,662
Value	$1,000	353,361.9	164,994.1	62,485.1	2,455.9	23,590.9	24,844.6	67,393.8	2,019.5	5,578.0
Average price	Dollars/kilogram	.703	.594	.704	1.175	.723	.810	1.100	.982	.728

NA = Not applicable.
n.a. = Not available.
-- = Nil or negligible.

1/ Average price at c.i.f. entry, converted from ECU to U.S. dollars using the following ratios: 1978--1:1.274, 1979--1:1.371, 1980--1:1.392. Market shares are based on value.
2/ Quantity not reported by source.

Source: (5).

above that in the Netherlands and almost 75 percent above that in France (18). Per capita consumption of table grapes was high also in West Germany, averaging 9.7 pounds per year in 1978-80.

France imported 89,000 tons of table grapes per year in 1978-80 and accounted for 18 percent of the EC import market. These imports supplemented net domestic production (production less exports) of 162,000 tons. Per capita consumption in France, at 10.3 pounds per person, was slightly higher than that in West Germany.

The United Kingdom is an important table grape market, but less so than its size of population would suggest. Imports in 1978-80 averaged 61,000 tons annually, or 12 percent of EC imports. Per capita consumption was lower than in any EC country except Ireland. In 1978-80, British consumers used only 2.4 pounds of table grapes per person per year.

The Netherlands and Belgium imported similar quantities of grapes and together accounted for almost 13 percent of the imports. Both countries are minor producers and exporters. Per capita consumption was 4.9 pounds in the Netherlands and 7.0 pounds in Belgium/Luxembourg.

Italy is a major producer of table grapes and imports very limited quantities to satisfy specific varietal, regional, or seasonal requirements. Per capita consumption was 39 pounds per year in 1978/79, an extraordinarily high level compared with that in other countries. If this rate should diminish in response to competition from other fruits, a large additional quantity of grapes might be forced onto the export market.

The EC imports grapes from numerous countries, primarily in the Mediterranean basin. Of these imports, 64 percent (324,000 tons annually) originated in Italy during 1978-80 and an additional 5 percent (26,000 tons) came from France. Approximately 12,000 tons were from other EC members, including re-exports.

Twelve third-country suppliers provided the remaining 29 percent (141,000 tons) of EC requirements. Minor producers not listed in EC statistical summaries provided 475 tons.

Spain was the major non-EC source to the EC for table grapes as befits its location and production capacity. Imports from Spain were 54,000 tons annually in 1978-80, 38 percent of the imports from all outside suppliers, but only 11 percent of all table grape imports.

Greece was the second ranking non-EC source. Imports from Greece averaged 39,000 tons annually in 1978-80, 27 percent of imports from outside supplies. However, these imports accounted for only 8 percent of total table grape imports.

The third major non-EC source was South Africa, which provided 26,000 tons per year or 18 percent of the imports from outside shippers and 5 percent from all exporters. Grapes from South

Africa are received in the winter and spring when they do not compete with EC-produced grapes, except those produced under glass.

The fourth ranking supplier was Cyprus with 13,000 tons, 9 percent of third country supplies and 3 percent of total EC imports. Eight other countries provided 2 percent of all EC imports of table grapes during 1978-80.

The United States supplied 2,400 tons annually during 1978-80, primarily of the emperor variety, with an average annual value of $3 million. This volume was 2 percent of the imports from non-EC sources or 0.5 percent of those from all sources. Imports were primarily in December and January with smaller amounts received in November and February. Spain and Italy were the major competitors of the United States in November and December, whereas Spain was the principal competitor in January and February.

Many varieties of table grapes are offered for sale on the EC market, and consumer preferences vary among countries (11). German consumers prefer white grapes, such as the Italian variety "regina," to black or red varieties. They shy away from the French variety "chasselas," an important part of French production, and from grapes with a muscat flavor. Dutch consumers have similar preferences. British buyers seek out "ohanes" from Spain and Thompson seedless and sultanas from Cyprus. French consumers prefer the locally grown and flavorful "chasselas." They also consume the "gros vert" and "muscat" varieties that are less popular in other markets. In Italy, "regina" and other domestically produced varieties are popular.

The EC divides the importing year into two seasons for import protection purposes. One season is defined as July 15 through October 31, the period of maximum EC production. The customs tariff in 1978-80 was 22 percent of dutiable value during this season, although tariff reductions were allowed for several Mediterranean suppliers. During the remainder of the marketing year--November 1 through July 14--tariffs dip slightly to 18 percent (except for emperor grapes which are subject to a lower schedule).

The seasonal differences in import market shares for table grapes are less significant than they are for oranges. However, because the United States is concerned primarily with the off-season market (November 1-July 14), that market deserves specific attention. Imports during the off season were 138,000 tons, 27 percent of the average annual imports for 1978-80. It is apparent that neither U.S. nor Southern Hemisphere producers have a lock on this market, although South Africa has an important position during the latter half of this season.

Italy was the primary supplier to the EC market during November 1-July 14, providing 35 percent of the import volume. Spain supplied 31 percent. The significance of these data is that both countries have late-season or storage varieties which can

compete with those of other suppliers, at least during the early months of the season. Spain stays in the market longer than Italy with shipments stretching out to March (although at a very low volume). Italian shipments are almost finished by the end of December or January.

South Africa shipped a yearly average of 26,000 tons of table grapes to the off-season market, 19 percent of EC imports during 1978-80. Receipts were concentrated in the March through June period. The principal competitors with South Africa during this period were Chile and Argentina, although Spain provided a small volume (27).

The United Kingdom and Ireland were the only EC importing countries that received an appreciable import share during the off season. Their receipts during this period amounted to 46 percent and 50 percent, respectively, of average annual imports. West Germany received only 22 percent of its requirements during the off season, but still purchased substantially more grapes than any other member country during that time.

Import Prices

Average duty-paid import prices vary considerably between supplier countries (table 8). This difference in prices is explained primarily by varietal and quality distinctions and by dissimilar marketing periods. The result is a disparity between relative prices and market shares.

Italy was the primary supplier to the EC during both import seasons. Prices during 1978-80 averaged 26 cents per pound in the regular season and 29 cents per pound in the off season. These prices were lower than those of other principal suppliers, except Greece. Even though Greece sold grapes at lower prices than other competitors during the regular and off seasons, it could only gain the second-ranking market share in the regular season and the fourth-ranking market share in the off season.

Prices for U.S. imports were considerably above the averages of major competitors during the off season. However, they were below those for South Africa which, as the closest important Southern Hemisphere producer, has a virtual monopoly on the spring market.

Fresh grape prices follow seasonal patterns which makes comparing prices which are averaged over several months difficult. This problem is apparent particularly for South Africa. EC imports from South Africa tend to be concentrated in April and May, and the high price reflects competitive conditions at that time. South African grapes are not readily substitutable with other grapes because very few alternatives are available.

EC imports from the United States tend to cluster in December when the major competition is from Spain. The difference between U.S. and Spanish prices during this period is due principally to varietal and quality differences. Imports from

the United States are mostly the emperor variety which can obtain a premium over some, but not all, Spanish varieties offered at that time.

French grapes are marketed later in the producing season than are Italian grapes because of climatic differences. The higher average price for French grapes reflects the changed market conditions in the later period and the differences in varietal mix and grape quality.

Most Greek grapes are marketed at the same time as Spanish grapes. However, they tend to be of lower quality (as measured by consumer preferences for flavor, size, and appearance) and cannot command the same price as Spanish grapes.

Government Intervention

Government programs for intervening in the production and marketing of grapes vary among countries. The intervention programs for the EC and other selected countries are described in the following sections.

Table 8--Table grapes: Import prices and shares of EC imports, by major suppliers and seasons, 1/ 1978-80 average

Supplier	July 15 to October 31		November 1 to July 14	
	Price 2/	Share 3/	Price 2/	Share 3/
	Cents per pound	Percent	Cents per pound	Percent
Italy	26.0	75.6	29.4	34.8
France	32.4	6.3	36.6	1.8
Spain	43.3	2.8	41.6	31.4
Greece	20.8	9.4	17.6	3.1
South Africa	88.7	4/	90.3	18.8
Cyprus	60.6	3.3	76.3	.7
United States	NA	NA	64.8	1.8

NA = not applicable.
1/ Seasons correspond to the EC's seasonal tariff scheme.
2/ Prices are average unit value of imports c.i.f. port of entry, plus applicable tariff. Prices are converted from ECU to dollars at average annual exchange rates.
3/ Volume market share.
4/ Less than 0.5 percent.

Sources: C.i.f. prices are from (5); tariffs are from (6).

EC. The following EC programs influence the marketing of table grapes:

- o A system of external tariffs to protect growers in Italy, France, and (after January 1, 1981) Greece from low-priced imports;
- o A system of reference prices to provide added protection from low prices on internal markets; and
- o A program of export subsidies to encourage shipments to third countries, particularly during periods of abundance.

The tariffs charged against table grapes were among the highest the EC applied to fresh fruits and vegetables in 1978-80. The basic tariff was 22 percent ad valorem for imports during the peak EC production period, July 15-October 31. For the remainder of the year, the relevant rate was 18 percent, even though the supply of Italian or French grapes was substantially or entirely inadequate to serve consumer requirements. Higher consumer prices resulted, without an offsetting benefit to EC table grape producers.

The EC has made a series of exceptions to this tariff schedule. As the result of GATT negotiations, the tariff on red emperor variety grapes (the principal variety imported from the United States) will be dropped in steps to 10 percent from its earlier level of 18 percent during December and January.

Duties were applied to imports from Spain and Portugal at 50 percent of the full rate for imports during January, February, and March. Other tariff exceptions were granted to various Mediterranean producers for trade or political reasons. The most common allowances were for a 60-percent reduction in tariffs for imports during the first part of the off season. The countries receiving such benefits were (and are) minor suppliers of table grapes.

The structure of external tariffs is not particularly favorable to U.S. exporters even with the special rate accorded to the emperor variety. The rate in 1980 was 14 percent for imports in December and January as compared with 11 percent for Spanish imports in January-March and 7.2 percent for most imports from North Africa and Turkey in December-April.

It is difficult to evaluate the effectiveness of tariffs, per se, because other forces have strongly influenced market results. However, during the past 10 years, Italian grape exports to other EC members increased about 65 percent while production expanded by 30 percent. Tariff protection must have been an important factor in making such an increase profitable.

Reference prices for table grapes are determined annually by the EC and are used as the basis for levies on low-priced imports. When the entry price of table grapes falls below the

reference price, a countervailing duty is charged against the exporting country.

The reference price established in 1979/80 was 17.6 cents per pound and the 1980/81 price was 18.1 cents per pound. Both of these prices were substantially below the EC average import price of 27 cents in 1978-80 (regular season) and below the calculated prices for all listed suppliers except Bulgaria. In the latter case, the volume was quite small and had little impact on the market. Consequently, it is unlikely that the reference prices significantly altered import patterns during 1978-80.

Incentives are paid by the EC for the export of table grapes to third countries. This program is unlike that for oranges in that subsidies are not offered for shipments to other EC members. The subsidies extended in 1981/82 were 2 cents per pound ($46 per ton) for shipments in August and September and 3.6 cents per pound ($72 per ton) for shipments during October to July. The subsidy was approximately 6-10 percent of the regular season export prices for France, Italy, and Greece during 1978-80 and 10-20 percent of the off-season export prices. The impact of these subsidies on trade with third countries was not evaluated. Although the subsidy level appears sufficient to divert some exports, the fact remains that France, Italy, and Greece still ship the preponderance of their exports to their EC partners.

EC policy incorporates a system of grades and standards and industry organization. French and Italian table grape producers have recommended tightening grape standards and bolstering producer organizations to restrict imports from Greece and Spain (after enlargement) and to improve their own competitive strategies (22). If these recommendations are adopted, there will be some readjustment in market shares between major suppliers, but it is unlikely to affect the United States because of concentration in a specific variety and quality market.

Other Producing Countries. Government programs affecting the production and marketing of table grapes vary in other producing countries.

The policies applied in Greece during 1978-80 are being adapted to meet the requirements of the EC, including the payment of export subsidies as previously discussed. In addition, Greece offered income support to growers of export-quality table grapes in 1981/82. The support amounted to 1.8 cents per pound, about 10 percent of average producer prices in 1978-80.

Spain's policy toward table grapes is part of an overall policy toward the fruit sector. The policy includes measures to improve production, such as assistance for pest control programs, machinery purchases, and facilities construction. The assistance to construction is in the form of low-interest

loans. The Government also granted a 3.5-percent tax rebate in 1981 for the export of table grapes. It offered special export subsidy of 1.8 cents per pound (5 percent of the 1978-80 c.i.f. price for all varieties) and a minimum grower price of $200 per ton for the ohane variety (22). The minimum grower price was low when compared with average producer prices for table grapes in Greece, $392 per ton, and in Italy, $341 per ton, during 1978-80 (4, p. 350).

Government intervention in South Africa centers on market organization rather than on payments to producers and exporters. The marketing of fresh table grapes is controlled by the Deciduous Fruit Board which operates in a manner similar to the Citrus Board.

Government policies in other supplier countries have little impact on trade because these countries are such minor sources for EC grape imports.

Production and Exports

I now describe the structure of table grape production and marketing in the principal suppliers to the EC. This information will help readers evaluate potential responses to changes which occur in the EC.

Table 9 presents production and marketing data for the seven countries which provided 96 percent of the EC's table grape imports in 1978-80. It shows that the major suppliers were not highly dependent on export marketings. This situation contrasts with that for oranges.

South Africa had the highest export dependence because it shipped 51 percent of its production to foreign markets. Four-fifths of these exports were directed toward the EC. Thus, South Africa might seem vulnerable to shifts in the EC's import policy for table grapes. However, South Africa's virtual monopoly in the spring market (because of contra-season production) suggests otherwise.

Italy had the second largest export dependence on the EC, although exporting only 29 percent of its production. Most (79 percent) of these exports go to other EC countries. There is a two-way dependency in this regard because imports from Italy accounted for almost 67 percent of EC imports. Therefore, a change in EC demand would not have much impact on Italian production, but a change in Italian production would have a major impact on EC markets.

The United States has the next largest export dependence--24 percent of the fresh market use. However, EC markets account for only 2 percent of U.S. exports (1.1-percent average in 1979-81). Over the past decade, U.S. exports to the EC have declined slightly, but total exports have expanded because of growing markets in Asia. Thus, average U.S. dependence on the EC markets has declined.

Table 9--Production and export of table grapes, by selected countries, 1978-80 average

Country	Pro-duction	Total exports	Exports share of pro-duction	Imports by EC	Imports share of total exports
	(1)	(2)	(3)	(4)	(5)
	1,000 metric tons		Percent	1,000 metric tons	Percent
France	194.3	32.5	16.7	25.5	78.5
Italy	1,418.7	411.2	29.0	323.5	78.7
Spain	471.7	65.2	13.8	53.6	82.2
Greece	263.9	50.1	19.0	38.6	77.0
South Africa	61.6	31.6	51.3	26.1	82.6
Cyprus	105.3	16.3	15.5	12.8	78.5
United States	1/462.7	110.2	23.8	2.4	2.2

1/ Total of fresh market utilization.

Sources: Cols. (1), (2), (7), (8); col. (4), (5); cols. (3) and (5), calculated.

The remaining major grape exporters to the EC--France, Spain, Greece, and Cyprus--export relatively small portions of their production. Exports as a percentage of production ranged from 14 to 19 percent for these four countries in 1978-80. However, each of these countries was highly dependent (77-82 percent) on the EC as an export market.

For France and Greece, this dependence is reinforced by the links among EC members. When Spain becomes a member these links will presumably continue. Spain is of particular concern because a slight increase in total production could increase export availability significantly, although at lower prices. For example, a 10-percent increase in average production would lower prices by about 22 percent (based on a price elasticity of demand of -0.45) and, if channeled to export markets, would increase export supply by 72 percent, according to 1978-80 averages.

Cyprus exported 16 percent of its table grape production in 1978-80, most of which went to the EC. The country's export program is highly vulnerable to shifts in the EC's import policy. Cyprus is likely to suffer after enlargement as Greece and Spain gain added market shares.

Impact of EC Enlargement

I estimated the impact of EC enlargement on trade in table grapes by using an econometric model of trade relationships. I further analyzed these results in the context of potential technological and policy changes.

Projections

Table 9 shows projections of EC imports of table grapes. We derived these projections from those made by Sarris based on 1979 market shares, using his trade model (17). The derivation of the Sarris model and the adaptions made for the projection presented in this study are explained in appendix A.

I projected EC table grape imports by applying the same change rates reported by Sarris for the EC to 1978-80 market shares. They differ from those Sarris projected by applying the percentage changes caused by income growth and by tariff reduction (17) to the 1978-80 imports from supplying countries. The results projected to 1986 also differ from those Sarris projected.

The projections in table 9 conform to the findings reported by Sarris that the removal of tariff and nontariff barriers facing Greece and Spain will affect overall EC imports far less than will anticipated changes in incomes. The latter changes are projected to expand imports by 1986 by $46 million, whereas the removal of barriers for Spain and Greece will further augment trade by $2.5 million.

Changes in import demand resulting from increased personal income are projected to increase imports from Italy by $27.2 million (14.3 percent), from South Africa by $4.9 million (11.2 percent), from Spain by $4.2 million (10 percent), and from France by $3 million (16.5 percent). Imports from the United States are projected to increase $255,000 or 8.4 percent because of income changes.

The price effect of eliminating barriers facing Spain and Greece is created by a change in relative prices between those countries and their competitors. For Greece, the entire effect results from the elimination of levies rather than tariffs because imports from Greece were not subject to the tariff during the base period. The relative change in imports from Greece caused by lower prices was 13.6 percent and that for imports from Spain was 9.8 percent. In absolute terms, the Spanish gain is larger than the Greek gain--$4.5 million compared with $2.7 million.

The other minor suppliers to the EC lose market shares as prices for imports from Spain and Greece become relatively lower. Losses in import value range between 4 percent for Cyprus and Israel and 0.6 percent for Bulgaria. The average export loss among non-EC producers is 2.3 percent.

The net result of income and price effects is to increase the imports from each supplier country, except Cyprus. Imports from Spain are projected to increase from $42 million in 1978-80 to $51 million in 1986, those from Greece to increase from $17 million to $23 million, and those from South Africa to increase from $44 million to $48 million. Italy is expected to maintain its dominant market share with imports valued at $214 million. These changes will have little impact on imports from the United States, which are projected to rise slightly from $3.0 million to $3.2 million.

The projections presented here represent a rigorous way of interpreting available market information. However, these projections are subject to varying interpretations based on individual beliefs about the various underlying assumptions. One assumption that tends to increase uncertainty is the use of demand parameters which have been estimated for all fresh fruits. Although an alternative estimate for such parameters is not provided, one should remember that imports of table grapes from non-EC suppliers actually declined between 1968-70 and 1978-80, even though real consumer income increased. If this behavior continues over the projection period, import levels and market shares for non-EC exporters will be lower than those shown in table 10.

Other Considerations

Projections in table 10 are based on past relationships among imports from individual countries, relative prices, and consumer income. It is also assumed that producing countries can supply whatever quantity is demanded. These relationships and assumptions enable us to evaluate changes in trade barriers (when they can be expressed in terms of price) and in income. These projections have not been used to explore the impact of changes in the reference price system or changes in various institutional arrangments. As noted in the discussion on oranges, such analysis would be extremely difficult, if possible at all.

Including Spain and Greece in the EC will not change the table grape market much because the EC has a high degree of self-sufficiency in table grapes and the new members are already principal suppliers. Consequently, what pressures emerge are more likely to relate to quality standards for Greek and Spanish grapes than to export subsidies for shipments to EC markets. Obviously, a "penetration" premium program, such as offered for oranges, would further reduce the market shares of competing suppliers.

The volume of exports needed to satisfy projected EC demand is modest relative to production in the supplying countries. The increase projected for Italy is 3 percent of 1978-80 average production; that for Spain is 2.4 percent; and that for Greece is 4.4 percent. These increases would not push production against land and water constraints.

Domestic demand is likely to grow in Greece and Spain, however, placing additional pressure on production. Depending on the

prices of competitive crops, the production response by grape producers might be less than needed. Past production increases in Greece indicate that profits are anticipated in table grape production and that land and water constraints have not been binding. There is little evidence that such barriers might curtail the level of expansion projected here.

The situation in Spain is similar. Discussions with personnel in USDA's Foreign Agricultural Service indicate that Spain will have enough land and water to increase grape production if relative prices are adequate.

Of more concern to the United States is the development of improved storage facilities in Spain that will permit intensified competition with imports from the United States. Such facilities would presumably encourage the production of late varieties which can be readily stored. This type of change will likely have far more influence on U.S. marketing strategy than will the enlargement of the EC.

RAISINS

The United States has a vital interest in EC trade in raisins, an interest sparked because of the EC's position as the dominant market for U.S. raisin exports. This interest was heightened by the export subsidies extended to Greek raisin producers after Greece entered the EC. These subsidies dramatically reduced the U.S. share of EC markets and threatened to disrupt markets in non-EC importing countries.

Structural Aspects of EC Trade

Raisins are the most important dried fruit imported into the EC. The average yearly import value for raisins in 1978-80 was $324 million, and that for prunes, the second ranking import, was $50 million.

Raisins are a diverse product and have several uses. To simplify, I use the term "raisin" here to refer to all classes of dried grapes. The various classes are often defined in the trade as follows:

Currants — Produced from Corinth grapes. They are small, mostly seedless, and reddish black in color.

Sultana — Produced from grapes, similar to the Thompson seedless, but the raisins are slightly smaller, rounder, and lighter in color. This term is increasingly used to include Thompson Seedless raisins.

Sultanina — Refers to raisins produced from Thompson seedless grapes and is sometimes applied to Australian sultanas.

Raisins — This term is replacing sultanina as the name for raisins made from Thompson Seedless grapes.

Table 10--Value of EC imports of table grapes from selected countries, 1978-80 average and projected 1986

Country	Base year 1978-80: Value 2/	Share	Changes caused by -- Income 1/: Amount 2/	Income 1/: Proportion	Enlargement: Amount 2/	Enlargement: Proportion	1986 projection: Value 2/	1986 projection: Share
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1,000 dollars	Percent	1,000 dollars	Percent	1,000 dollars	Percent	1,000 dollars	Percent
France	18,458	5.22	3,041	16.48	-212	-0.99	21,287	5.29
Italy	189,338	53.58	27,207	14.37	-2,360	-1.09	214,185	53.28
Spain	42,192	11.94	4,198	9.95	4,532	9.77	50,922	12.66
Greece	17,413	4.92	2,490	14.30	2,708	13.61	22,611	5.62
South Africa	44,001	12.45	4,945	11.24	-778	-1.59	48,168	11.98
Cyprus	14,659	4.14	277	1.89	-651	-4.36	14,285	3.55
United States	3,046	.86	255	8.40	-89	-2.70	3,212	.79
Rest of world	24,255	6.86	3,767	15.53	-675	-2.41	27,347	6.80
Total	353,362	100.00	46,180	13.07	2,475	.62	402,017	100.00

Note: Percentage totals may not add to 100 because of rounding.

1/ Income changes are those created by income growth without accounting for price effects of eliminating barriers facing Spain and Greece.
2/ Deflated to 1978-80 average. Converted from ECU at average annual exchange rates.

Sources: Col. (1) Table 7; cols. (2), (7), and (8), calculated; cols. (3), (4), (5), (6), computed from (17).

The various types of raisins are not perfect substitutes. For bakery use in Great Britain, for example, currants are much preferred to sultanas for their size, appearance, and flavor. In West Germany, the confectionery trade prefers raisins (sultaninas) because their flavor complements that of chocolate and because they are relatively free-flowing. These preferences can be translated into price differentials which are usually observed in the market place among raisins from different sources.

Raisins are also distinguished by quality, although such a distinction does not appear in import data. According to trade

sources, raisins from some exporting countries require cleaning or other additional treatment to make them usable. Consequently, importers are willing to pay a premium for raisins that do not require further treatment. Prior to 1978, raisins from the United States could be sold at prices $200-$400 per ton higher than those of other suppliers because of their superior quality (15). The pricing situation has changed since that time and is analyzed later.

Imports

The EC market for raisins has been rather static for the past two decades. Imports averaged 213,000 tons yearly in 1956-60, 216,000 tons in 1967-70, and 215,000 tons in 1977-80. These import levels by EC member countries occurred while both world production and exports declined slightly from their levels in the late sixties.

The structure of EC imports for 1978-80 is presented in table 11. The annual average of EC imports during that period was 215,000 tons with a value of $324 million. The United Kingdom (U.K.) was, by far, the leading EC customer for raisins (and currants, if considered separately). It imported 99,000 tons and accounted for 46 percent of the EC's imports. About half the U.K.'s imports went to the retail trade and were primarily sultanas. The other half, composed primarily of sultaninas and currants, was assumed, on the basis of past trends, to have been used by the bakery and confectionery industries. Currants are used primarily in fruit cakes, cookies, and puddings; retail use is not significant.

West Germany was the second major buyer in the EC, taking 45,000 tons at an average yearly value of $69 million. Traditionally, about 25 percent of the imports are used at retail. The retail trade prefers large, light-colored sultanas and currants (the inverse of the U.K. preferences). The bakery and confectionery industries use about 75 percent of the imports. The bakery trade prefers lighter sultanas, but confectioners tend to prefer the darker and more flavorful sultaninas. These preferences partly depend on the size of price differentials among different raisin types and qualities. Preferences are changing as relative prices favor one type or quality over another. Relative prices are the crux of the problem confronting U.S. exporters faced with subsidized competition from Greece.

The Netherlands is also an important importer of raisins, taking an average of 25,000 tons yearly in 1978-80 and accounting for 12 percent of EC imports. The trade in the Netherlands generally prefers darker raisins (sultaninas). This preference is closer to that in the U.K. than to that in neighboring West Germany. Imports by other EC members are not large. France and Italy each accounted for about 7 percent of imports, and Belgium and Ireland each took half that amount.

Greece supplied 37 percent of the raisins and currants imported by the EC in 1978-80. Most of the Greek shipments went to the U.K., where they represented over 70 percent of imports. West Germany and the Netherlands each took about 16 percent of the amount Greece shipped to the U.K.

Table 11--Selected information on EC imports of dried raisins, by member country, 1978-80 average 1/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
France:										
Quantity	1,000 kilograms	118	60	NA	3	2	5	43	6	—
Value	$1,000	171.4	114.7	NA	5.6	5.7	9.1	33.2	3.0	—
Average price	Dollars/kilogram	1.452	1.911	NA	1.866	2.850	1.820	.772	.500	--
Price index	NA	96.35	125.06	NA	120.69	186.51	109.70	53.09	34.27	NA
Market share	Percent	--	.1	NA	—	—	—	--	—	—
Belgium/Luxembourg:										
Quantity	1,000 kilograms	14	2/	6	--	8	NA	—	—	—
Value	$1,000	48.7	1.9	13.5	--	33.4	NA	--	--	--
Average price	Dollars/kilogram	3.478	--	2.250	—	4.175	NA	—	—	—
Price index	NA	230.78	--	141.68	NA	273.23	NA	NA	NA	NA
Market share	Percent	—	—	—	--	—	NA	--	—	--
Netherlands:										
Quantity	1,000 kilograms	1,330	91	371	2/	NA	857	3	—	6
Value	$1,000	2,199.0	110.6	622.5	.5	NA	1,447.4	6.9	--	11.1
Average price	Dollars/kilogram	1.653	1.215	1.677	n.a.	NA	1.688	2.300	—	1.850
Price index	NA	109.68	79.51	105.60	n.a.	NA	101.74	158.18	NA	92.08
Market share	Percent	.6	.1	2.6	n.a.	NA	14.9	—	—	.1
West Germany:										
Quantity	1,000 kilograms	603	NA	25	--	282	46	36	—	214
Value	$1,000	946.2	NA	47.6	—	443.7	68.3	40.7	--	346.1
Average price	Dollars/kilogram	1.569	NA	1.904	—	1.573	1.484	1.130	--	1.617
Price index	NA	104.11	NA	119.89	NA	102.94	89.45	77.71	NA	80.48
Market share	Percent	.2	NA	.2	--	1.1	.7	--	--	5.7
Italy:										
Quantity	1,000 kilograms	120	18	75	--	7	17	--	3	—
Value	$1,000	114.6	27.4	59.9	--	15.3	12.1	--	3/	--
Average price	Dollars/kilogram	.955	1.522	.798	—	2.185	.711	--	n.a.	--
Price index	NA	63.37	99.60	50.25	NA	142.99	42.85	NA	n.a.	NA
Market share	Percent	--	—	.2	--	—	.1	--	n.a.	--
United Kingdom:										
Quantity	1,000 kilograms	620	1	103	--	101	36	--	375	4
Value	$1,000	1,141.1	2.3	195.6	--	226.4	41.3	--	664.5	10.9
Average price	Dollars/kilogram	1.840	2.300	1.899	—	2.241	1.147	--	1.772	2.725
Price index	NA	122.09	150.52	119.58	NA	146.66	69.13	NA	121.45	135.63
Market share	Percent	.3	—	.8	--	.5	.4	—	5.8	.1

See notes at end of table.

Continued--

Table 11--Selected information on EC imports of dried raisins, by member country, 1978-80 average (continued) 1/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
Ireland:										
Quantity	1,000 kilograms	26	--	--	--	--	--	26	NA	--
Value	$1,000	49.4	--	--	--	--	--	49.4	NA	--
Average price	Dollars/kilogram	1.900	--	--	--	--	--	1.900	NA	--
Price index	NA	126.07	NA	NA	NA	NA	NA	130.67	NA	NA
Market share	Percent	--	--	--	--	--	--	--	NA	--
Spain:										
Quantity	1,000 kilograms	280	13	182	27	16	10	18	11	2
Value	$1,000	847.7	43.5	578.0	97.5	32.0	37.6	28.9	23.3	6.8
Average price	Dollars/kilogram	3.027	3.346	3.175	3.611	2.000	3.760	1.605	2.118	3.400
Price index	NA	200.86	218.97	199.93	233.57	130.89	226.64	110.38	145.16	169.23
Market share	Percent	.2	--	2.4	.4	--	.3	--	.2	.1
Greece:										
Quantity	1,000 kilograms	79,348	8,695	4,968	3,000	8,232	174	52,610	1,442	227
Value	$1,000	115,484.9	13,819.2	7,787.4	4,713.6	11,591.6	295.4	74,857.7	2,031.2	388.8
Average price	Dollars/kilogram	1.455	1.589	1.567	1.571	1.408	1.697	1.422	1.408	1.712
Price index	NA	96.54	103.99	98.67	101.61	92.14	102.29	97.79	96.50	85.21
Market share	Percent	35.5	20.1	33.2	20.8	29.9	3.0	51.9	17.7	6.4
Turkey:										
Quantity	1,000 kilograms	63,178	13,183	4,350	11,097	13,792	2,512	14,634	3,338	272
Value	$1,000	95,030.4	19,576.4	6,972.8	16,997.4	20,931.9	3,807.2	21,739.2	4,541.4	464.2
Average price	Dollars/kilogram	1.504	1.484	1.602	1.531	1.517	1.515	1.485	1.360	1.706
Price index	NA	99.80	97.12	100.88	99.02	99.28	91.32	102.13	93.21	84.91
Market share	Percent	29.2	28.5	29.8	75.2	54.1	39.3	15.0	39.7	7.6
USSR:										
Quantity	1,000 kilograms	245	66	--	36	59	10	64	9	--
Value	$1,000	315.3	98.3	--	39.7	69.1	13.7	80.8	13.7	--
Average price	Dollars/kilogram	1.286	1.489	--	1.102	1.171	1.370	1.262	1.522	--
Price index	NA	85.33	97.44	NA	71.28	76.63	82.57	86.79	104.31	NA
Market share	Percent	--	.1	--	.1	.1	.1	--	.1	--
Czechoslovakia:										
Quantity	1,000 kilograms	122	--	--	--	--	--	--	122	--
Value	$1,000	191.0	--	--	--	--	--	--	191.0	--
Average price	Dollars/kilogram	1.565	--	--	--	--	--	--	1.565	--
Price index	NA	103.84	NA	NA	NA	NA	NA	NA	107.26	NA
Market share	Percent	--	--	--	--	--	--	--	1.6	--

See notes at end of table.

Continued--

Table 11--Selected information on EC imports of dried raisins, by member country, 1978-80 average (continued) 1/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
South Africa:										
Quantity	1,000 kilograms	8,755	1,420	208	43	223	19	6,586	235	20
Value	$1,000	14,391.9	2,394.5	367.8	77.5	399.9	33.5	10,675.9	405.2	37.6
Average price	Dollars/kilogram	1.643	1.686	1.768	1.802	1.793	1.763	1.620	1.724	1.880
Price index	NA	109.02	110.34	111.33	116.55	117.34	106.26	111.41	118.16	93.57
Market share	Percent	4.4	3.4	1.5	.3	1.0	.3	7.4	3.5	.6
United States:										
Quantity	1,000 kilograms	14,334	4,315	1,166	42	1,689	1,017	3,838	340	1,926
Value	$1,000	27,503.1	7,633.0	2,215.7	73.3	3,680.2	2,199.4	6,771.0	606.7	4,323.8
Average price	Dollars/kilogram	1.918	1.768	1.900	1.745	2.178	2.162	1.764	1.784	2.244
Price index	NA	127.27	115.70	119.64	112.87	142.53	130.31	121.32	122.27	111.69
Market share	Percent	8.4	11.1	9.4	.3	9.5	22.7	4.6	5.3	71.4
Mexico:										
Quantity	1,000 kilograms	327	5	9	--	--	--	--	313	--
Value	$1,000	591.1	9.3	14.4	--	--	--	--	567.5	--
Average price	Dollars/kilogram	1.807	1.860	1.600	--	--	--	--	1.813	--
Price index	NA	119.90	121.72	100.75	NA	NA	NA	NA	124.26	NA
Market share	Percent	.1	--	--	--	--	--	--	4.9	--
Cyprus:										
Quantity	1,000 kilograms	794	--	20	--	10	62	702	--	--
Value	$1,000	885.4	--	32.3	--	10.2	76.3	766.5	--	--
Average price	Dollars/kilogram	1.115	--	1.615	--	1.020	1.230	1.091	--	--
Price index	NA	73.98	NA	101.70	NA	66.75	74.14	75.03	NA	NA
Market share	Percent	.2	--	.1	--	--	.7	.5	--	--
Iran:										
Quantity	1,000 kilograms	13,383	7,455	1,256	224	121	306	3,832	92	97
Value	$1,000	19,403.3	10,722.7	1,746.1	349.5	166.6	460.8	5,676.8	147.1	133.7
Average price	Dollars/kilogram	1.449	1.438	1.390	1.560	1.376	1.505	1.481	1.598	1.378
Price index	NA	96.15	94.10	87.53	100.90	90.05	90.71	101.85	109.52	68.59
Market share	Percent	5.9	15.6	7.4	1.5	.4	4.7	3.9	1.2	2.2
Afghanistan:										
Quantity	1,000 kilograms	9,424	823	163	28	436	148	6,703	909	215
Value	$1,000	12,289.5	1,012.3	205.0	40.9	587.6	210.1	8,805.0	1,143.1	285.4
Average price	Dollars/kilogram	1.304	1.230	1.257	1.460	1.347	1.419	1.313	1.257	1.327
Price index	NA	86.52	80.49	79.15	94.43	88.15	85.53	90.30	86.15	66.05
Market share	Percent	3.7	1.4	.8	.1	1.5	2.1	6.1	9.9	4.7

See notes at end of table.

Continued--

Table 11--Selected information on EC imports of dried raisins, by member country, 1978-80 average (continued) 1/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
China:										
Quantity	1,000 kilograms	311	106	2	--	--	--	163	39	1
Value	$1,000	476.9	137.4	3.7	--	--	--	267.6	67.3	.8
Average price	Dollars/kilogram	1.533	1.296	1.850	--	--	--	1.641	1.725	.800
Price index	NA	101.72	84.81	116.49	NA	NA	NA	112.86	118.23	39.82
Market share	Percent	.1	.2	--	--	--	--	.1	.5	--
Australia:										
Quantity	1,000 kilograms	21,286	8,488	1,754	87	238	560	9,583	564	12
Value	$1,000	31,501.5	12,681.9	2,445.7	152.4	353.5	902.0	13,981.4	965.9	18.6
Average price	Dollars/kilogram	1.479	1.494	1.394	1.751	1.485	1.610	1.458	1.712	1.550
Price index	NA	98.14	97.77	87.78	113.26	97.18	97.04	100.27	117.34	77.15
Market share	Percent	9.7	18.5	10.4	.6	.9	9.3	9.7	8.4	.3
Rest of world:										
Quantity	1,000 kilograms	599	79	69	9	64	59	269	35	13
Value	$1,000	840.6	120.9	90.5	26.3	98.4	71.3	346.5	66.6	20.1
Average price	Dollars/kilogram	1.403	1.530	1.311	2.922	1.537	1.208	1.288	1.902	1.546
Price index	NA	93.09	100.13	82.55	189.00	100.58	72.81	88.53	130.36	76.95
Market share	Percent	.2	.1	.3	.1	.2	.7	.2	.5	.3
World:										
Quantity	1,000 kilograms	215,216	44,820	14,726	14,597	25,279	5,838	99,111	7,835	3,009
Value	$1,000	324,423.1	68,506.2	23,398.6	22,574.1	38,645.5	9,685.6	144,127.6	11,437.5	6,048.0
Average price	Dollars/kilogram	1.507	1.528	1.588	1.546	1.528	1.659	1.454	1.459	2.009

-- = Nil or negligible.
NA = Not applicable.
n.a. = Not available.
1/ Average price of c.i.f. entry, converted from ECU to U.S. dollars using the following ratios: 1978--1:1.274, 1979--1:1.371, 1980--1:1.392. Market shares are based on value.
2/ Quantity not reported by source.
3/ Value not reported by source.

Source: (5).

Turkey served 29 percent of the EC market with shipments that were fairly evenly distributed among the major importers. Turkish raisins found particular favor in Italy and the Netherlands, where they gained high market shares. Australia was the next major source for raisins and provided 10 percent of the imports to the EC. As one might expect, the primary market was the U.K.

EC imports of raisins from the United States averaged 14,000 tons yearly during 1978-80 with a value of $27.5 million. These imports represented 7 percent of the import market. West Germany was the primary market for U.S. raisins, receiving an average of 4,300 tons annually in 1978-80. The second most important customer for the United States was the United Kingdom, which took 3,800 tons. The third major importer was Denmark, which purchased 1,900 tons, 63 percent of total requirements. The U.S. market share was less than 10 percent in each of the other member countries except Belgium, where it reached 17 percent.

Import Prices

The average value of raisins and currants imported by the EC during 1978-80 was 68.3 cents per pound. Export data are not sufficiently refined to provide a price breakdown by quality. However, the average price encompasses a wide range of quality and varietal differences. One can deduce some of these differences by comparing the duty-paid price received by various exporting countries (table 12). However, the price differences for raisins are not so large as those previously identified for fresh oranges and table grapes. This situation reflects the relatively nonperishable nature of raisins.

The lowest raisin price among the important suppliers to the EC was offered by Afghanistan at 61 cents per pound. This price is generally justified by the quality of raisins from that source. Prices received by Greece, Iran, Turkey, and Australia ranged between 66 cents and 70 cents per pound. This narrow range reflects a reasonable similarity in competitive products. The average price for imports from South Africa was 77.5 cents. The acceptance of raisins at that price is indicative of product quality.

The price for U.S. raisins was the highest of all major suppliers--90.4 cents per pound. This price was almost 50 percent higher than the price of raisins from Afghanistan and 24.4 cents per pound higher than the average Greek price. On a per-ton basis, the difference between U.S. and Greek prices was $538 per ton, substantially above the premium that trade sources traditionally believe to be warranted.

The price position of the United States has been damaged by the depreciation of EC currencies with respect to the dollar. For example, raisins exported to West Germany at an average f.o.b. (before overseas freight and handling) value of 75.4 cents per pound in crop year 1979/80 required the equivalent payment of 1.30 Deutsche marks (DM) per pound. In the following year, the average price in dollars had actually declined slightly but the

price in DM increased 12 percent. Over the 2-year period, crop year 1979 to crop year 1981, the average f.o.b. price increased 5.6 percent in dollars but 37.3 percent in DM, based on December 31 exchange rates.

The U.S. position has also been adversely affected by the depreciation of the Greek drachma in relation to the DM. For the 2-year period 1979 to 1981 (crop years), minimum prices for Greek growers increased by 22 percent, but the equivalent price in DM increased by 16 percent.

Price differences between U.S. and Greek raisins are enhanced by price supports extended to Greek raisin growers. These growers received 60 cents per pound for raisins produced in 1981/82, based on the official minimum price established by the EC plus certain other permitted support payments (23). The minimum price is set to at least cover average production costs.

During January 1982, trade sources reported that Greek (and Turkish) sultanas were being offered c.i.f. Hamburg and London at prices between 48 and 55 cents per pound (15). The difference between the market price and the Greek grower price was made up by subsidies which shielded producers from the impact of market prices which were below average production costs.

Table 12--Prices and market shares for raisins and currants imported into the EC from selected countries, 1978-80 average

Country	Duty-paid price	Volume market share
	Cents/pound	Percent
Afghanistan	61.4	4.4
Australia	69.8	9.9
Greece	66.0	36.9
Iran	68.3	6.2
Turkey	69.6	29.4
South Africa	77.5	4.1
United States	90.4	6.7

Sources: C.i.f. prices are from (5); tariff rates are from (6); and market share is calculated from table 11.

Government Intervention

Government programs for intervening in the production and marketing of raisins vary among countries. The intervention programs for the EC and other selected countries are described in the following sections.

EC. Until the accession of Greece, the EC had not developed a program for dried vine fruit. Such a program became necessary after Greece's accession to the EC because of the importance of raisin and currant production to Greek agriculture. The EC extended to Greece the types of production and marketing aid which existed within the policy covering the market for processed fruits. The precedent for raisins existed within the aid system which had been developed earlier for dried prunes.

The EC system is designed to replace past intervention by the Greek Government, although as of the 1982/83 season, certain national aids were still permitted. The key elements of the EC program are as follows:

- The determination of minimum grower prices based on trends in costs and previous prices,
- A system of subsidies for processors based on the difference between prices for EC raisins and non-EC raisins, and
- A tariff system to increase the price of raisins imported from nonmember countries.

The combination of EC and national aids applied to currants is similar to that for sultanas, although minimum prices and subsidies are somewhat lower. The following description refers to the sultana program. For crop year 1981/82, the EC established a minimum grower price of 54.4 cents per pound. Raisin producers may sell their entire crop to the Greek Government at this minimum support price. The Government can then sell the product to exporters on the open market. Any profits on such transactions are passed back to growers while any losses are absorbed by the Government (23). Furthermore, the Greek Government was authorized to pay an additional 6 cents per pound to supplement the EC-guaranteed minimum price.

EC regulations allowed the payment of about 6 cents per pound to processors or packers who paid at least the minimum price to growers. A storage subsidy of approximately $3.50 per ton per week of storage was also authorized.

The 1981/82 program indicates the magnitude of subsidies received by Greek producers and processors. In effect, Greek processors bought raisins for 48.4 cents per pound, Greek producers received 60.4 cents per pound, and subsidies made up the difference. Subsidies represented 20 percent of the grower price.

The tariff system for the EC was established at a time when the EC did not produce raisins in commercial quantities. In

recent years, the rate was 4 percent ad valorem with exemptions granted to Turkey and Greece for shipments in containers of not more than 15 kilograms. The EC agreed to reduce the tariff on raisins to 3 percent ad valorem over an 8-year period during the Tokyo round of multilateral trade negotiations.

Other Producing Countries. Other producing countries have a variety of price support and/or marketing programs, but none is as comprehensive as that of Greece. The following summary is derived primarily from information published by the USDA's Foreign Agricultural Service (23).

Policy in Turkey is implemented through a system of minimum grower prices and export taxes. The support price in 1981/82 was the equivalent of 42 cents per pound plus modest added payments if certain horticultural or processing practices are followed. Export prices in November 1981 were quoted at 49.9 cents per pound, f.o.b. Because of financial problems, the budget for Government support and export schemes for raisins was reduced. Consequently, the Government could purchase only about 33 percent of the crop, and many growers were forced to sell on the free market at prices below support levels.

Raisin exporters were required to pay 7.6 cents per pound into a price stabilization fund which finances agricultural improvements. The Government influences export prices by varying the amount of this export premium deposit. For example, the November 1981 export price of 49.9 cents per pound for raisins equals the minimum grower price plus the required export deposit.

Australia has used a price stabilization program to influence the production of sultanas. The program was designed to provide a guaranteed minimum price to growers, but was terminated in 1981. However, a replacement program along similar lines was proposed for the 1982-86 period. Additionally, a marketing board--the Australian Dried Fruits Corporation--establishes export prices and makes allocations to the export market.

A similar scheme is utilized in South Africa where all raisins, sultanas, and currants must be sold through the Dried Fruit Board. The Board fixes advance prices for producers and, as the exclusive exporting authority, determines export offering prices.

The United States is the only major supplier without some form of significant production or marketing intervention. A Federal and a State market order are used to carry out certain limited programs of research, promotion, and crop diversion, subject to the approval of the Secretary of Agriculture or the California Director of Agriculture, as appropriate. The Secretary of Agriculture has been reluctant to approve recommendations which would restrict crop availability to the domestic market through compulsory diversion to export markets

or supply pools. Unlike the marketing boards of some competing export countries, U.S. marketing orders cannot establish prices (except for minimum export prices from the reserve pool), execute sales agreements, or provide for crop purchases. A major, but not exclusive, share of exports is made by the large Sun Maid cooperative.

Production and Exports

Table 13 presents the basic data for producing and exporting raisins and currants by the principal suppliers to the EC. The five countries listed provided 87 percent of the EC's imports of raisins in 1978-80.

Annual production in the five countries averaged 537,000 tons in 1978-80, a decline of 10 percent from the 1968-70 average. This difference is difficult to interpret because of extreme annual fluctuations in production, but it does indicate a lack of growth in raisin production. All the reduction occurred in Greece and Turkey, whereas the other three countries registered slight tonnage gains.

Total exports declined by the same percentage as production, but by less in absolute volume. In aggregate, the five countries retained the same degree of export dependence as in 1968-70. The United States and Australia reduced their export dependence, but Greece, Turkey, and South.Africa increased their reliance on export markets. Aggregate exports of the five countries to the EC went down slightly (6 percent) during a period in which EC imports stabilized. Consequently, the five lost market shares in the EC to other suppliers.

Turkey had the highest export ratio of the major suppliers to the EC. In 1978-80, Turkey exported 90 percent of production, with 81 percent of these exports destined for the EC. Consequently, Turkey is extremely sensitive to changes in EC policy concerning raisins. A 10-percent reduction in EC purchases from Turkey would amount to 7.3 percent of total production.

Greece also relies extensively on export markets to assure the profitability of raisin production. Exports in 1978-80 accounted for 81 percent of production and, of this, 71 percent was directed towards the EC. The importance of the EC market to Greece stimulated intense pressure for the strengthening of the CAP to protect and expand Greece's position in these markets. Production in Greece declined during the seventies, partly in response to Government programs to reduce currant production in marginal, high-cost vineyards (2).

Australia increased domestic consumption of raisins and also reduced export levels. Exports to the EC declined by 10,400 tons between 1968-70 and 1978-80, whereas exports to non-EC countries increased slightly (1,800 tons). Continued subsidies for Greek exports will further encourage the diversion of exports to non-EC markets.

Table 13--Production and exports of dried raisins and currants, selected producers, 1968-70 and 1978-80 averages

Country and year	Production	Total exports	Exports to EC	Share that exports are of production	Share that exports to EC are of total exports
	---1,000 tons---			---Percent---	
Greece:					
1968-70	181.6	126.8	87.4	69.8	68.9
1978-80	137.7	111.7	1/79.3	81.1	71.0
Change	-43.9	-15.1	-8.1	NA	NA
Turkey:					
1968-70	108.3	77.7	55.7	71.8	71.7
1978-80	86.7	78.3	1/63.2	90.3	80.7
Change	-21.6	.6	7.5	NA	NA
South Africa:					
1968-70	14.3	7.8	4.9	54.6	62.8
1978-80	19.5	11.8	1/8.8	60.5	74.6
Change	5.2	4.0	3.9	NA	NA
United States:					
1968-70	214.1	63.3	18.8	29.6	29.7
1978-80	216.6	49.3	1/14.3	22.8	29.0
Change	2.5	-14.0	-4.5	NA	NA
Australia:					
1968-70	76.1	57.9	31.7	76.1	54.7
1978-80	76.4	49.3	1/21.3	64.5	43.2
Change	.3	-8.6	-10.4	NA	NA

NA = Not applicable.
1/ Imports reported by the EC.

Sources: (5, 23).

South Africa produced only 19,500 tons of raisins annually in 1978-80, but was aggressive in marketing them. Exports to the EC expanded more rapidly than total exports during the seventies and resulted in a greater dependence on this market.

The United States exported 23 percent of its raisins in 1978-80 and was least dependent on export markets of all the major raisin producers. Exports in 1978-80 averaged 49,000 tons, a drop of 25 percent from 1968-70. Exports to the EC averaged 29 percent of total exports and about 11 percent of total production.

Raisin production in the United States fluctuated considerably during the seventies because of variable weather conditions and competing uses for raisin variety grapes in crush and fresh

markets. The low point of production was 90,000 tons in 1978 and the high point was 285,000 tons in 1980. Export allocations did not completely reflect this variability which suggests some sales efforts to maintain a viable export marketing program. However, exports to the EC were unstable. Variations over the 1971-80 period, as measured by the coefficient of variation, approximately equaled those in production. Exports to the EC averaged 14,000 tons annually during 1971-80 (inclusive) and ranged between 8,500 tons in 1978 and 22,900 tons in 1971.

Impact of EC Enlargement

The evaluation of the impact of enlargement on the EC raisin trade cannot be considered apart from what happened after Greece joined the EC. Therefore, one should analyze the results derived from the economic projections reported in the next section in the context of the considerations following that section.

Projections

Table 14 presents projections of EC imports of raisins. These projections are derived from the Sarris projections (17), according to the procedures described in appendix A of my report. The parameter values Sarris uses in his projections of raisin imports were: price elasticity, -0.31; income elasticity, 0.47; and substitution elasticity, 0.66 (17).

The projection results in table 14 differ from Sarris' projections primarily because of differences in market shares in the base years used for each projection. These differences are not particularly significant because they fall within the range of normal year-to-year variations.

The principal conclusion derived from the projections in table 14 is that the price effects of enlargement arising from elimination of barriers facing Greece and Spain are negligible. This is evident if the market share columns for 1978-80 and 1986 are compared.

This result occurs because most Greek exports entered duty free into the EC before enlargement and because the increase anticipated from Spain is extremely small. Income changes are projected to expand aggregate EC imports by $31 million (9.6 percent), and price effects are projected to add $23,000. The price effect would increase imports from Spain.

The prospects that Iran or Afghanistan will meet their projected requirements are open to question. If they do not, other suppliers will take up their market share (about 10 percent). Based on price and quality, the most likely beneficiary is Turkey.

The ability of the United States to maintain its market shares as projected depends entirely on its ability to maintain a competitive pricing strategy. The drop in U.S. exports, which occurred after the 1978-80 base period used here, indicates a legitimate reason to be concerned about relative prices.

Table 14--Value of EC imports of raisins and currants from selected countries, 1978-80 average and projected 1986

Country	Base year 1978-80: Value 2/	Share	Changes caused by -- Income 1/: Amount 2/	Pro-portion	Enlargement: Amount 2/	Pro-portion	1986 projection: Value 2/	Share
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1,000 dollars	Percent	1,000 dollars	Percent	1,000 dollars	Percent	1,000 dollars	Percent
Australia	31,502	9.71	3,711	11.78	-3	-0.01	35,210	9.90
Greece	115,485	35.59	11,017	9.54	-12	-.01	126,490	35.57
Iran	19,403	5.98	2,233	11.51	-2	-.01	21,634	6.08
South Africa	14,392	4.43	1,264	8.78	0	0	15,656	4.40
Spain	848	.26	161	19.01	52	5.22	1,061	.30
Turkey	95,030	29.29	9,493	9.99	-10	-.01	104,513	29.39
United States	27,503	8.47	1,584	5.76	-2	-.01	29,085	8.18
Rest of world	20,260	6.25	1,700	8.39	0	0	21,960	6.18
Total	324,423	100.00	31,163	9.61	23	.01	355,609	100.00

Note: Percentage totals may not add to 100 because of rounding.

1/ Income changes are those created by income growth without accounting for price effects of eliminating barriers facing Spain and Greece.
2/ Deflated to 1978-80 average. Converted from ECU at average annual exchange rates.

Sources: Col. (1) table 11; cols. (2), (7), and (8), calculated; cols. (3), (4), (5), (6), computed from (17).

Other Considerations The projections presented in table 14 are based on the assumption that the only change in EC policy will be to eliminate tariff and nontariff barriers for Greece and Spain. This assumption is highly speculative given the willingness of the EC to accede to Greek demands in 1981 and 1982 for higher subsidies and special considerations for Greek producers and exporters. The Greek Government increased grower minimum prices significantly for 2 years prior to entering the EC. The higher price level provided a basis from which the EC determined its support prices for raisins in 1981 and beyond.

Higher prices, per se, by a major world exporter could serve as a price umbrella for other traders. However, the opposite result occurred as export agencies sought to unload excess stocks through subsidized sale on EC markets. A continuation of subsidies at their 1981/82 levels, approximately 12 cents per pound divided between growers and processors (not including the storage subsidy of $3.50 per ton per week), would permit exporters to sell at lower relative prices than they did during the seventies when subsidies were a smaller proportion of the raisin price.

However, such subsidies would be expensive. At 12 cents per pound, it would take $23 million to market Greece's projected share of imports in 1986. This subsidy would create pressures to obtain offsetting revenues from other suppliers to the EC through reference price schemes, licensing, or some type of quota. The only avenue not now open to the EC is to increase the external tariff which is bound in GATT.

A continued high level of subsidies to Greek producers will undoubtedly call for a similar response from Turkey as it seeks to maintain its EC markets. Thus, the continuation of high EC subsidies will have cost impacts, either through retaliatory subsidies or through lost markets, on other suppliers to the EC market. The alternatives open to the EC appear to be: (1) a policy of minimum grower prices established at a level consistent with EC policy for other foods and a system of reference prices to assure that raisins are not imported at lower prices, (2) a system of minimum grower prices coupled with an export subsidy geared to average world prices (for example), or (3) a system of lower producer prices established to bring supply into balance with demand at world prices and a retirement subsidy for producers unable to maintain production.

Given the pressures from North European importers of raisins and the fiscal problems forecast for EC enlargement by Josling and Pearson (11), it seems more likely that the EC-10 (the EC-9 plus Greece) might opt for the first alternative. Until that decision is made, the market for raisins in the EC will probably not be settled and projections based on past experience will need to be viewed with caution.

There seems to be no serious constraint on Greece's ability to expand production by the amount projected in table 14. The critical issue is profitability, which involves maintaining minimum prices at a level needed by the multitude of small holders on Crete who produce the preponderance of Greek grapes. Their costs of production are high, and their opportunities for economies of scale are limited. Land and water constraints could become factors if sizeable changes in production were to be attempted.

ALMONDS

The EC trade in almonds affects relatively few countries--Italy, Spain, and the United States--where almond production is concentrated. It is extremely important to specific regions within those countries because of the localized nature of almond production.

Structural Aspects of EC Trade

The structure of trade includes the pattern of imports and their prices, the nature of government intervention in production and marketing, and the relationship of production and trade in the major producing countries. Almonds are a specialized and semiperishable commodity that often utilize unique channels of distribution.

Imports

The EC is the world's leading importer of almonds. Imports during the 1978-80 period averaged 70,000 tons annually with a value of $283 million. The EC's almond supply is made up of Italian and modest French production plus a considerable volume of imports. Total use of this supply increased only slightly during the seventies, but the mix between domestic production and imports changed significantly. Italian production declined by 15,300 tons, on average, between 1968-70 and 1978-80, and imports from non-EC sources expanded by 19,000 tons (38 percent).

Almonds are imported for use in bakery products, in confectionery and marzipan paste, and for retail sales. Because industrial uses predominate, the derived nature of almond demand is extremely important in economic analysis. Preferences have shifted over time toward the shelled rather than the in-shell product, reflecting the importance of industrial use and of retail packaging. A small market exists for bitter almonds, but its limited size precludes analysis here.

Table 15 presents the basic data on almond imports in 1978-80. The United States was by far the leading supplier of almonds to the EC; the U.S. share reached 62 percent in 1978-80. The second ranking supplier was Spain with a share of 19 percent, followed by Italy with 9 percent. Portugal and Tunisia each shipped 2 percent, and the remaining market (roughly 6 percent) was served by 13 countries listed in EC statistics plus several others that were not.

Re-exports of almonds by the first importing country accounted for about 3.6 percent of listed imports. That is why nonproducing countries such as the Netherlands or West Germany are listed as almond exporters in table 15. Such re-exports cause the market shares of the original almond suppliers to be slightly understated.

West Germany imports more nuts than any other country in the world (7). It is the premier buyer of almonds in the EC and its use has expanded far more rapidly (55 percent) than the EC average during the past decade. West Germany accounted for 48 percent of EC imports in 1978-80 and took over 50 percent of the EC imports from the United States and 39 percent of those from Spain. The United States supplied 71 percent of West Germany's almond requirements in 1978-80.

West Germany uses about 65 percent of its almond imports for bakery products, marzipan, and confectionery products. The balance goes to the retail market, generally through salters and roasters. California almonds are favored because of their quality, cleanliness, appearance, and longer shelf life. These

Table 15--Selected information on EC imports of sweet almonds, by member country, 1978-80 average 1/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
France:										
Quantity	1,000 kilograms	343	88	NA	48	7	194	6	--	--
Value	$1,000	1,574.4	420.5	NA	261.5	22.5	845.6	24.2	--	--
Average price	Dollars/kilogram	4.590	4.778	NA	5.447	3.214	4.358	4.033	--	--
Price index	NA	113.05	120.17	NA	124.58	74.19	96.18	105.79	NA	NA
Market share	Percent	.5	.3	NA	1.9	.1	8.6	--	--	--
Belgium/Luxembourg:										
Quantity	1,000 kilograms	11	1	8	--	2	NA	2/	--	--
Value	$1,000	58.0	6.0	43.6	--	7.4	NA	.9	--	--
Average price	Dollars/kilogram	5.272	6.000	5.450	--	3.700	NA	n.a.	--	--
Price index	NA	129.85	150.90	128.68	NA	85.41	NA	n.a.	NA	NA
Market share	Percent	--	--	--	--	--	NA	n.a.	--	--
Netherlands:										
Quantity	1,000 kilograms	135	30	4	--	NA	101	--	--	--
Value	$1,000	656.5	137.8	20.0	--	NA	498.7	--	--	--
Average price	Dollars/kilogram	4.862	4.593	5.000	--	NA	4.937	--	--	--
Price index	NA	119.75	115.51	118.06	NA	NA	108.96	NA	NA	NA
Market share	Percent	.2	.1	--	--	NA	5.0	--	--	--
West Germany:										
Quantity	1,000 kilograms	1,623	NA	717	82	461	254	9	5	94
Value	$1,000	7,983.5	NA	3,427.0	427.5	2,350.6	1,292.3	19.5	25.1	441.5
Average price	Dollars/kilogram	4.918	NA	4.779	5.213	5.098	5.087	2.166	5.020	4.696
Price index	NA	121.13	NA	112.84	119.23	117.68	112.27	56.82	85.51	116.99
Market share	Percent	2.8	NA	5.1	3.1	11.3	13.1	--	1.2	5.7
Italy:										
Quantity	1,000 kilograms	5,826	3,306	1,288	NA	688	364	102	--	77
Value	$1,000	23,937.8	12,914.9	5,719.1	NA	2,881.2	1,804.0	317.3	--	301.4
Average price	Dollars/kilogram	4.108	3.906	4.440	NA	4.187	4.956	3.110	--	3.914
Price index	NA	101.18	98.23	104.84	NA	96.65	109.37	81.58	NA	97.50
Market share	Percent	8.4	9.7	8.6	NA	13.8	18.4	1.0	--	3.9
United Kingdom:										
Quantity	1,000 kilograms	381	44	19	--	5	5	NA	302	6
Value	$1,000	2,195.8	193.9	108.3	--	23.7	16.1	NA	1,821.9	31.9
Average price	Dollars/kilogram	5.763	4.406	5.700	--	4.740	3.220	NA	6.032	5.316
Price index	NA	141.94	110.81	134.59	NA	109.41	71.06	NA	102.75	132.43
Market share	Percent	.7	.1	.1	--	1	1	NA	89.9	.4

See notes at end of table.

Continued—

Table 15--Selected information on EC imports of sweet almonds, by member country, 1978-80 average (continued) 1/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
Switzerland:										
Quantity	1,000 kilograms	24	20	—	—	2	2	--	—	—
Value	$1,000	78.1	67.1	--	--	3.0	8.1	—	--	--
Average price	Dollars/kilogram	3.254	3.355	—	—	1.500	4.050	--	—	—
Price index	NA	80.14	84.38	NA	NA	34.62	89.38	NA	NA	NA
Market share	Percent	—	--	—	--	—	—	--	—	--
Portugal:										
Quantity	1,000 kilograms	1.507	453	55	--	78	342	563	--	16
Value	$1,000	4,236.2	1,211.7	164.8	--	184.8	1,366.8	1,257.8	--	50.4
Average price	Dollars/kilogram	2.811	2.674	2.996	—	2.369	3.996	2.234	--	3.150
Price index	NA	69.23	67.25	70.74	NA	54.68	88.19	58.60	NA	78.47
Market share	Percent	1.4	.9	.2	—	.8	13.9	3.9	--	.6
Spain:										
Quantity	1,000 kilograms	13,237	5,189	4,575	1,177	1,191	248	780	5	72
Value	$1,000	56,335.9	21,600.9	20,202.4	4,664.8	5,516.9	1,165.2	2,784.7	30.2	370.8
Average price	Dollars/kilogram	4.255	4.162	4.415	3.963	4.632	4.698	3.570	6.040	5.150
Price index	NA	104.80	104.67	104.25	90.64	106.92	103.68	93.65	102.89	128.30
Market share	Percent	19.9	16.2	30.5	34.5	26.5	11.8	8.7	1.4	4.8
Greece:										
Quantity	1,000 kilograms	100	56	—	44	—	—	2/	—	--
Value	$1,000	527.0	289.3	--	236.7	--	--	.9	--	--
Average price	Dollars/kilogram	5.270	5.166	—	5.379	--	—	n.a.	--	--
Price index	NA	129.80	129.92	NA	123.03	NA	NA	n.a.	NA	NA
Market share	Percent	.1	.2	—	1.7	--	—	n.a.	--	—
Turkey:										
Quantity	1,000 kilograms	85	72	10	--	2/	1	2/	—	2/
Value	$1,000	383.6	319.2	52.9	--	.9	8.2	1.4	--	.9
Average price	Dollars/kilogram	4.512	4.433	5.290	--	n.a.	8.200	n.a.	--	n.a.
Price index	NA	111.13	111.49	124.91	NA	n.a.	180.97	n.a.	NA	n.a.
Market share	Percent	.1	.2	—	--	n.a.	—	n.a.	--	n.a.
Morocco:										
Quantity	1,000 kilograms	826	113	679	20	13	—	—	—	—
Value	$1,000	3,440.4	472.3	2,819.0	74.1	75.0	--	--	--	--
Average price	Dollars/kilogram	4.165	4.179	4.151	3.705	5.769	—	—	—	--
Price index	NA	102.58	105.10	98.01	84.74	133.17	NA	NA	NA	NA
Market share	Percent	1.2	.3	4.2	.5	.3	—	--	--	--

See notes at end of table.

Continued--

Table 15--Selected information on EC imports of sweet almonds, by member country, 1978-80 average (continued) 1/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
Tunisia:										
Quantity	1,000 kilograms	1,533	17	1,516	--	--	--	--	--	--
Value	$1,000	4,497.5	67.4	4,430.2	--	--	--	--	--	--
Average price	Dollars/kilogram	2.933	3.9674	2.922	--	--	--	--	--	--
Price index	NA	72.24	99.69	68.99	NA	NA	NA	NA	NA	NA
Market share	Percent	1.5	--	6.7	--	--	--	--	--	--
United States:										
Quantity	1,000 kilograms	43,058	23,690	6,518	1,613	2,333	642	6,612	32	1,617
Value	$1,000	173,775.8	94,177.7	26,560.4	7,377.7	9,665.4	2,779.6	26,727.8	148.5	6,338.7
Average price	Dollars/kilogram	4.035	3.975	4.074	4.573	4.142	4.329	4.042	4.640	3.920
Price index	NA	99.38	99.97	96.19	104.59	95.61	95.54	106.03	79.04	97.65
Market share	Percent	61.4	70.8	40.1	54.6	46.4	28.3	84.2	7.3	82.8
Cyprus:										
Quantity	1,000 kilograms	313	125	2	--	5	10	171	--	--
Value	$1,000	391.2	120.9	7.8	--	5.5	14.8	242.2	--	--
Average price	Dollars/kilogram	1.249	.967	3.900	--	1.100	1.480	1.416	--	--
Price index	NA	30.76	24.32	92.08	NA	25.39	32.66	37.14	NA	NA
Market share	Percent	.1	--	--	--	--	.1	.7	--	--
Iran:										
Quantity	1,000 kilograms	120	103	--	4	--	--	6	--	7
Value	$1,000	602.3	517.3	--	18.7	--	--	32.5	--	33.8
Average price	Dollars/kilogram	5.019	5.022	--	4.675	--	--	5.416	--	4.828
Price index	NA	123.62	126.30	NA	106.93	NA	NA	142.07	NA	120.27
Market share	Percent	.2	.3	--	.1	--	--	.1	--	.4
Israel:										
Quantity	1,000 kilograms	365	64	194	34	--	--	66	--	8
Value	$1,000	1,503.8	252.2	752.3	167.0	--	--	287.6	--	44.8
Average price	Dollars/kilogram	4.120	3.940	3.877	4.911	--	--	4.357	--	5.600
Price index	NA	101.47	99.09	91.54	112.32	NA	NA	114.29	NA	139.51
Market share	Percent	.5	.1	1.1	1.2	--	--	.9	--	.5
Pakistan:										
Quantity	1,000 kilograms	71	--	--	63	8	--	--	--	--
Value	$1,000	300.7	--	--	266.7	34.1	--	--	--	--
Average price	Dollars/kilogram	4.235	--	--	4.233	4.262	--	--	--	--
Price index	NA	104.31	NA	NA	96.82	98.38	NA	NA	NA	NA
Market share	Percent	.1	--	--	1.9	.1	--	--	--	--

See notes at end of table.

Continued--

Table 15--Selected information on EC imports of sweet almonds, by member country, 1978-80 average (continued) 1/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
Rest of world:										
Quantity	1,000 kilograms	88	47	17	5	4	1	5	2/	8
Value	$1,000	297.0	121.9	1,773.7	16.9	18.5	2.2	25.0	.3	38.0
Average price	Dollars/kilogram	3.375	2.593	104.335	3.380	4.625	2.200	5.000	n.a.	4.750
Price index	NA	83.12	65.21	2463.63	77.31	106.76	48.55	131.16	n.a.	118.33
Market share	Percent	.1	.0	2.6	.1	0	0	0	n.a.	.4
World:										
Quantity	1,000 kilograms	69,646	33,419	15,602	3,090	4,799	2,163	8,321	345	1,906
Value	$1,000	282,775.5	132,891.0	66,081.4	13,511.6	20,789.4	9,801.7	31,721.7	2,025.3	7,652.2
Average price	Dollars/kilogram	4.060	3.976	4.235	4,372	4.332	4.531	3.812	5.870	4.014

-- = Nil or negligible.
NA = Not applicable.
n.a. = Not available.
1/ Average price at c.i.f. entry, converted from ECU to U.S. dollars using the following ratios: 1978--1:1.274, 1979--1:1.371, 1980--1:1.392. Market shares are based on value.
2/ Quantity not reported by source.

Source: (5).

characteristics are particularly important for processing and for the retail trade. Both Italian and Spanish almonds have excellent flavor and are, therefore, used by industry. Hazelnuts are competitive in several uses and are found in confectionery products more often than almonds.

France is the second ranking importer of almonds in the EC and accounted for 22 percent of total imports. French almond consumption has also been increasing and grew about 25 percent during the seventies. The French market in 1978-80 was more evenly divided among suppliers than was the West German market. The United States was the leading supplier, but Spain was reasonably close behind. Several North African suppliers relied on France to take most of their exports to the EC. This market share pattern is consistent with France's proximity to Spain and its close ties with North Africa.

The United Kingdom accounted for 12 percent of EC average yearly imports in 1978-80, taking 8,300 tons at a value of $8 million. Almond imports declined by 8 percent based on 1966-70 and 1976-80 averages. The United States supplied 79 percent of the market, and Spain and Portugal furnished most of the rest.

The market in the United Kingdom is similar to that in West Germany. Most of the product moves into industrial uses, mostly for bakeries and perhaps 25 percent for confectioners. A significant part of the industrial input goes into production of marzipan paste.

Import Prices

The market shares presented in table 16 are not directly correlated to relative import prices. This situation occurs because the imports from various suppliers are not strictly comparable in terms of quality, packing, timing, and conditions of sale. These differences are not reflected in the summary statistics used to describe trade flows.

Table 16--Prices and market shares for sweet almond imports in the EC, by selected suppliers, 1978-80 average

Country	Duty-paid price at entry 1/	Share of all imports
	Dollars per pound	Percent
Portugal	1.36	2.2
Tunisia	1.42	2.2
Italy	1.86	8.4
United States	1.96	61.8
Morocco	2.02	1.2
Spain	2.02	19.0

1/ Duty calculated at 7 percent ad valorem for all countries except Italy.

Source: Calculated from data in table 15.

Export prices need to be adjusted for comparative purposes to account for differences in pricing practices. For example, Italy and Spain usually quote prices free on board (f.o.b. or f.o.t.), whereas U.S. export prices are free along side (f.a.s.), which are subject to loading charges.

Spanish and Italian prices are normally quoted on a gross-for-net basis, which means that the buyer pays the same price for the carton weight as for the almond weight. The effective price is also influenced by moisture content and the presence of foreign material. Mediterranean almonds typically have moisture levels 2-3 percent higher than those of California almonds. Quality standards also permit a higher proportion of foreign material.

Most almonds used in Western Europe are blanched; that is, their skins are removed. Because Mediterranean almonds have coarser (heavier) skins, they lose more weight in the blanching process than do the thin-skinned California almonds (11 percent as compared with 7 percent). This difference influences the competitive price relationships observed in the market place.

Other price differentials arise from product availability, the seasonal pattern of exports, flavor preferences, and the quality mix of shipments.

Table 16 compares duty-paid prices with market shares for several important exporters in 1978-80. The United States obtained a premium for its almonds relative to Italy and many minor suppliers. The average duty-paid price for imports from the United States was $1.96 per pound. Spain received a higher average price than did the United States, but Italy, Portugal, and Tunisia sold at prices below the U.S. level. If Spain had been a member of the EC, its price would have been $1.93 per pound, slightly below the U.S. level.

Average c.i.f. prices for imported almonds vary among importing countries and among supplying countries. The reasons for these variations are complex, but are primarily explained by freight rate differentials, quality differences, and dissimilar seasonal patterns of imports.

Prices for almond imports from the United States were similar in West Germany, France, and the United Kingdom because of nearly equivalent overseas freight rates and comparable product quality. A more significant variation exists between the average prices of imports from other countries. For example, the average c.i.f. value for imports from Italy during 1978-80 was $2.01 per pound in France, $1.77 per pound in West Germany, and $1.41 per pound in the United Kingdom. This difference was due partly to variations in the quality mix purchased by each country and partly to different relative volumes purchased in each year. In 1980, a year of short production and high export prices in Italy and Spain, the United Kingdom drastically reduced almond imports from

those countries. Purchases that were made were for lower quality nuts which sold at prices well below the average EC import price from those countries. This shift resulted in a lower average c.i.f. price in the United Kingdom--$1.73 per pound for Spanish imports and $1.41 per pound for Italian imports--than in other EC countries during 1978-80.

Prices for imports from Portugal were approximately 30 percent below prices from other suppliers (except for a small quantity from Cyprus). The price reflected the lower average quality of almonds shipped during 1978-80.

Government Intervention

Government programs for intervening in the production and marketing of almonds vary among countries. The intervention programs for the EC and other selected countries are described in the following sections.

EC. The EC support program for almonds is relatively modest. The program involves payments for exports to third (non-EC) countries and a fairly low external tariff of 7 percent. The export subsidy is difficult to calculate because of changing currency exchange rates. In dollar terms, the export subsidies were 5.8 cents per pound in 1979/80 and 4.5 cents per pound in 1980/81. The export subsidies were 2-3 percent of average Italian export prices in 1979 and 1980. The subsidy does not apply to exports to other EC countries which take the greatest share of Italian exports. Consequently, the subsidy has little impact on the competitive situation within the EC.

The Italian almond industry declined during the seventies because of problems with disease and because other land use was more profitable. The protection offered by the tariff did little to stem this decline. The enormous increase in almond imports from the United States during the same period indicates the ineffectiveness of the tariff in diverting market demand.

The Italian Government, or its regional subunits, have provided restructuring assistance to improve almond production. The Apulia Region, an important almond-producing area, appropriated about $4.4 million for a program to support the planting of new varieties and for the adoption of improved irrigation and phytosanitary procedures. It is not certain that these appropriated funds will actually be spent or that they will actually improve almond production.

Other Producing Countries. Government intervention in Spain is within the context of the overall policy governing fruits and nuts. It is similar in this respect to the program discussed earlier on oranges (see pp. 16-17). The Government has not established a price-support system and growers must rely on "free" market forces to determine prices (12, p. 55). The Government does offer some types of production-oriented subsidies to improve production. This assistance involves fuel subsidies, the purchase of certain types of

equipment, and the granting of loans (subject to limitations) for the construction of facilities, primarily for irrigation.

A local tax rebate is paid for the export of almonds, just as for other products. In 1980/81, this tax rebate was 5.5 percent for in-shell and 6.5 percent for shelled almonds.

U.S. Government intervention is limited to indirect supports through activities such as marketing orders, agricultural research, trade negotiation, and trade promotion. Evaluation of these activities is beyond the scope of this report. However, these indirect supports are unlikely to significantly influence U.S. production and export patterns.

Government activities in other producing countries such as Portugal and Morocco have little impact on overall EC trade patterns because their exports are quite low.

Production and Exports

Table 17 shows the structure of almond production and exports for six important exporting countries. The United States was the world's leading almond producer in 1978-80 with an average annual output of 123,400 tons. The 1980-82 average increased to 159,000 tons because of expanded acreage and better yields (1). This volume was almost four times larger than in 1965-69 and represents 58 percent of world production. California almond production is expected to increase still further by 1986 because of the extensive nonbearing acreage standing in 1981.

The United States is also the leading exporter of almonds, accounting for over half the world's exports. U.S. exports averaged 66,000 tons per year in 1978-80 and increased to almost 95,000 tons in crop year 1981/82. Growth in U.S. exports has paralleled expansion of output; the 1978-80 average for both production and exports was 3.3 times the 1968-70 average. U.S. production grew by 60,000 tons, and U.S. exports grew by 46,000 tons during this period.

The United States depends increasingly on export markets to move its expanded production. Export dependency increased from 35 percent in 1965-69 to 65 percent in 1979-81. Of U.S. almond exports in 1979-81, 59 percent went to the EC. Changes in EC policy that would impede market access for U.S. almonds would have serious implications for the United States because of the volume of shipments to that market and their share of total U.S. output.

Spain ranks after the United States as a producer and exporter of almonds. Its production increased from an average of 31,000 tons in 1968-70 to 47,000 tons in 1978-80. Spain's almond output is expected to reach 75,000 tons as current young plantings mature during the mideighties. Production in peak years could be substantially higher. Much of the increase in almond plantings during the past decade

resulted from the replacement of unprofitable olive groves in the Levante and the Andalucia regions.

The varietal composition of Spain's almond orchards results in a low shell-out ratio as compared with California's. This ratio, of course, reduces net recovery and lowers income prospects for the orchard. Early flowering and poor coordination of flowering time between varieties also leads to low production. Research efforts directed to resolving the pollenization problem could improve yields and boost production from existing orchards. Approximately 6 percent of the Spanish almond crop is irrigated (12). Increasing the proportion of irrigated almond orchards would improve production because irrigated orchards have average yields nearly triple those of nonirrigated orchards. New irrigation projects were funded in 1980 for regions or provinces with approximately 37 percent of Spain's almond-producing area (the Andalusia regions and the provinces of Murcia and Valencia).

Spain's exports of almonds increased moderately between the 1968-70 and 1978-80 periods, and export dependence dropped from 62 percent to 47 percent. Dependence on EC markets also decreased, although about 55 percent of the exports went to the EC in 1978-80.

Italy's almond production declined rapidly during the early seventies and then moved to a higher level that was still below earlier averages. The drop between 1968-70 and 1978-80 was 15,000 tons, or almost half of earlier production. Production losses were caused by urban encroachments, virus problems, and substitution of more profitable crops.

Italy's almond exports fell by the same amount as production during the 1968-70 to 1978-80 period. The loss in Italian exports was transmitted directly to the EC where imports from Italy fell by 13,000 tons. This reduction in imports from Italy was more than compensated for by the gain in imports from the United States. Despite the drop in exports, Italy still depends on EC members for over 80 percent of its exports.

Almond production in Portugal was about the same in 1978-80 as in 1968-70. However, production in the intervening period dipped in response to political uncertainties. Almond exports declined, but those to the EC held up better than did other export markets. The net result of this shift in trade was to increase Portugal's dependence on the EC market.

The almond situation in Iran is uncertain. Production appears somewhat down from earlier years and exports are off substantially. The statistics on Iranian production and exports are of questionable validity.

Table 17--Production and exports of sweet almonds, by selected countries, 1968-70 and 1978-80 averages 1/

Country	Production	Exports to all destinations	Imports by EC	Exports as share of production	EC imports as share of exports
	(1)	(2)	(3)	(4)	(5)
	- - 1,000 tons (kernel basis) - -			- - Percent - -	
Iran:					
1968-70	7.6	5.0	1.2	65.8	24.0
1978-80	6.3	.8	.1	12.7	12.5
Italy:					
1968-70	32.6	22.5	19.1	69.0	84.9
1978-80	17.3	7.0	5.8	40.5	82.9
Morocco:					
1968-70	3.1	2.0	1.9	64.5	95.0
1978-80	3.2	2.2	.8	68.8	36.4
Portugal:					
1968-70	4.1	2.9	1.8	70.7	62.1
1978-80	4.2	1.8	1.5	42.8	83.3
Spain:					
1968-70	30.5	19.0	13.2	62.3	69.5
1978-80	47.0	21.9	13.1	46.6	54.8
United States:					
1968-70	53.3	19.9	8.4	37.3	42.2
1978-80	123.4	65.7	43.1	53.2	65.6

1/ Reporting periods are not consistent for all countries as between production year and export year.

Sources: Col. (1) and (2), (7), (8), (9); col. (3), (5), (24); cols. (4) and (5), calculated.

Impact of EC Enlargement

EC enlargement would eliminate the already modest EC tariffs facing Spain and Portugal. Consequent changes in market shares would be insignificant because of wide variations in almond qualities, taste preferences, and terms of sale. Considerations concerning anticipated production increases and uncertainties about trade policies will likely be more important than those concerning enlargement.

Projections

Table 18 shows projections of EC imports of almonds in 1986, after enlargement. The projections are based on those developed by Sarris (17) with modifications as described in appendix A. The various elasticity parameters Sarris used are the same as those for fresh fruits and nuts (17).

The projection results in table 18 differ from those of Sarris primarily because of differences in market shares in the base years. These differences are not significant because they are well within the range of normal year-to-year variations.

Two principal conclusions are apparent. One conclusion is that the effect of removing tariff and nontariff barriers facing Spain and Portugal will be negligible for overall trade. The tariff changes will increase imports by only $589,000 above their level without enlargement. Spain will be the principal beneficiary of the change with a sales gain of $2.1 million, and Portugal will gain $175,000. These increases will be at the expense of the United States, which is projected to be $1.3 million below its nonenlargement level of sales; Italy is projected to drop $177,000, and other countries will lose about $283,000 in sales.

Table 18---Value of EC imports of sweet almonds from selected countries, 1978-80 average and projected 1986

Country	Base year 1978-80: Value 2/	Share	Changes caused by -- Income 1/: Amount 2/	Pro-portion	Enlargement: Amount 2/	Pro-portion	1986 projection: Value 2/	Share
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1,000 dollars	Percent	1,000 dollars	Percent	1,000 dollars	Percent	1,000 dollars	Percent
Italy	23,938	8.46	3,796	15.86	-177	-0.64	27,557	8.54
Portugal	4,236	1.49	527	12.46	175	3.69	4,938	1.53
Spain	56,336	19.92	8,658	15.37	2,144	3.30	67,138	20.80
United States	173,776	61.45	21,687	12.48	-1,270	.65	194,193	60.17
Rest of world	24,490	8.66	4,721	19.27	-283	-.97	28,923	8.96
Total	282,776	100.00	39,389	13.93	589	.18	322,754	100.00

Note: Percentage totals may not add to 100 because of rounding.

1/ Income changes are those created by income growth without accounting for price effects of eliminating barriers facing Portugal and Spain.
2/ Deflated to 1978-80 average. Converted from ECU at average annual rates.

Sources: Col. (1), table 15; cols. (2), (7), (8), calculated; cols. (3), (4), (5), (6), computed from (17).

Income growth in the EC is projected to increase import demand by $39 million, or 14 percent above the 1978-80 average. This expansion dwarfs that attributed to tariff changes. The United States consequently is projected to enjoy a net increase of $20.4 million in sales after income and price effects are considered. All suppliers are projected to benefit from expanded demand.

These observations lead to the second principal conclusion: projected market shares in 1986 differ little from those in 1978-80; hence, under the projection assumptions, the major suppliers have little to worry about because of enlargement. The projected expansion to a $323 million market makes the EC market a prime candidate to absorb expected increases in world almond production.

Other Considerations

The projections in table 18 are based on a real economic growth rate in the EC that averages 2.7 percent per year between 1979 and 1986. However, actual growth rates between 1980 and 1982 were considerably below that level, and the current (1983) outlook for economic recovery is not promising. Thus, demand projections must be tempered by individual expectations about growth rates. Linked to this problem is uncertainty about future exchange rates. During much of the period used for estimation of demand relationships, the dollar was undervalued in relation to other currencies. This situation has changed and the price for U.S. imports has increased relative to those for other countries. Thus, one must consider the currency exchange relationships implicit in the real price projections presented here. Josling and Pearson (11) evaluated this problem in the context of EC budget projections.

Bushnell (3) estimated almond demand and supply functions for several important trading countries. The parameters were derived specifically for almonds and differ from the ones I used in the projections here. Consequently, when one applies the same economic growth rate to the Bushnell functions, a different projection of future demand emerges. These projections show that Spanish production would be 17 percent above its nonenlargement level if Spain becomes a member of the EC and that the United States would suffer a 14-percent drop in its exports to the EC. The dynamic relationships estimated in Bushnell's model tend to produce severe fluctuations in annual results as the projection period is pushed forward. Thus, one needs to be cautious when comparing Bushnell's projections with those presented here, which span a 7-year period.

This report does not attempt to reconcile differences in income projections or estimated parameters of various studies. Rather, my objective is to stress the importance of recognizing uncertainty when dealing with future events.

The EC's almond imports from Spain are projected to increase by $10 million, or approximately 2,500 shelled tons based on the values in tables 15 and 18. This quantity is small relative to

Spain's current and potential production. But, the increase projected for the United States is well within the reach of anticipated expansion in production and export availability. A review of current acreage and production trends shows that U.S. production potential will grow by 30,000-40,000 tons between 1981 and 1986. Similar reckoning shows that Spain's output potential will grow by 15,000-30,000 tons. These supplies will likely spur aggressive marketing campaigns to dispose of increased surplus.

The EC is the logical market for Spain's added production after Spain joins the EC and tariffs are dropped. For this to happen, however, other policy changes must occur in the EC. The most logical policy objective would be to provide Spain a greater price advantage in the EC market through penetration premiums, such as those paid for Italian citrus, or through a system of reference prices and variable levies against imports from non-EC countries. Neither an increase in tariffs nor the establishment of an import quota appears likely in view of GATT or other trade considerations. The impact of an EC policy change on imports from the United States is difficult to evaluate. However, an effective trade diversion policy would have to reduce imports from the United States because of their dominance over imports from all other non-EC suppliers.

A rapidly increasing supply is likely to be the principal problem of the world almond industry between 1982 and 1986. Changes in EC membership are considerably less important than is production expansion under the EC's current agricultural policy. However, changes in that policy after Spain's accession could lead to trade disruptions similar to those experienced by the raisin trade after Greece entered the EC.

PROCESSED PEACHES

The processed peaches considered in this report are canned peaches. I do not analyze dried and frozen peaches and peach nectar because they are not important to EC trade and consumption. Canned peaches are the most valuable canned fruit the EC imports.

Structural Aspects of EC Trade

The structural aspects of trade are dominated by the EC system of processing subsidies. This system has altered the structure of imports and their prices. It has also influenced the structure of production in the EC and exports by non-EC suppliers.

Imports

The EC imported an average of 168,000 tons of processed peaches per year, valued at $114 million, during 1978-80 (table 19). Such imports typically account for about 20 percent of the EC's canned fruit imports.

No trend in canned peach imports is apparent. Imports ranged between 150,000 and 240,000 tons during 1973-80, depending on EC production and domestic selling prices. U.S. exporters formerly enjoyed a substantial market share, but it eroded after the formation of the EC.

South Africa was the major supplier of canned peaches to the EC in 1978-80. Imports from that country averaged 62,000 tons with a c.i.f. value of $46.5 million. South Africa's volume market share was 36.7 percent of total EC imports. The United Kingdom was the principal buyer, taking 65 percent of the imports from South Africa. Trading links between the two countries are strong for all of South Africa's exported horticultural crops. West Germany was the second major market in the EC, taking 13,000 tons of canned peaches from South Africa. The remaining EC imports from South Africa were spread among other EC members

Greece was the second ranking supplier of processed peaches to the EC, providing 32 percent of imports with an average value of $32 million in 1978-80. Imports from Greece were more evenly distributed among EC members than those from South Africa; West Germany received about 50 percent; France, 25 percent; and the United Kingdom, 11 percent.

Italy was the primary EC source for processed peaches, although its industry is mostly geared to the fresh market. Italy shipped 23,000 tons of processed peaches annually to its EC partners in 1978-80 and accounted for 13.6 percent of their imports. The United Kingdom was the main importer, receiving an average of 8,500 tons per year; West Germany was close behind at 7,800 tons, followed by France at 4,400 tons.

The United States provided 10 percent of the EC's imports of processed peaches in 1978-80 (19.5 percent in 1978, 5.7 percent in 1979, and 7.6 percent in 1980). Imports averaged 16,000 tons yearly with a c.i.f. value of $11 million. West Germany was by far the dominant customer, taking almost 75 percent of the imports. The United Kingdom took 11 percent, and the remaining 15 percent was shipped mostly to Belgium and the Netherlands.

Australia furnished 4 percent of the EC's canned peach imports during 1978-80, most of which went to their traditional customer, the United Kingdom. Denmark was the other major buyer.

West Germany imported an average of 62,994 tons of processed peaches in 1978-80 and was the EC's primary importer. The principal suppliers were Greece (44 percent), South Africa (21 percent), and the United States (19 percent).

The United Kingdom imported almost as large a quantity of processed peaches in 1978-80 as did West Germany. Its imports of 62,000 tons were divided among South Africa (65 percent), Italy (14 percent), Greece (9 percent), and Australia (8 percent). The next ranking EC importers in 1978-80 were France with an annual average of 18,000 tons and the Netherlands with 10,000 tons.

The diversity of import volumes reflects the differences in consumer preferences among the EC countries. In the past few years, peaches have accounted for 20-25 percent of the canned fruit imports in the United Kingdom and West Germany, but less than 10 percent in the Netherlands and France.

Table 19--Selected information on EC imports of preserved peaches, by member country, 1978-80 average 1/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
France:										
Quantity	1,000 kilograms	1,522	1,391	NA	65	5	46	15	--	--
Value	$1,000	1,210.0	1,077.4	NA	50.7	6.9	45.0	30.0	--	--
Average price	Dollars/kilogram	.795	.774	NA	.780	1.380	.978	2.000	--	--
Price index	NA	117.25	127.09	NA	127.65	198.56	123.95	262.46	NA	NA
Market share	Percent	1.0	2.8	NA	6.4	--	.7	--	--	--
Belgium/Luxembourg:										
Quantity	1,000 kilograms	171	4	--	--	167	NA	--	--	--
Value	$1,000	67.1	3.8	--	--	63.3	NA	--	--	--
Average price	Dollars/kilogram	.392	.950	--	--	.379	NA	--	--	--
Price index	NA	57.81	155.99	NA	NA	54.53	NA	NA	NA	NA
Market share	Percent	--	--	--	--	.8	NA	--	--	--
Netherlands:										
Quantity	1,000 kilograms	292	147	--	--	NA	144	1	--	--
Value	$1,000	270.1	93.8	--	--	NA	174.8	1.4	--	--
Average price	Dollars/kilogram	.925	.638	--	--	NA	1.213	1.400	--	--
Price index	NA	136.43	104.76	NA	NA	NA	153.73	183.72	NA	NA
Market share	Percent	.2	.2	--	--	NA	3.0	--	--	--
West Germany:										
Quantity	1,000 kilograms	1,593	NA	2/	--	1,114	220	12	--	247
Value	$1,000	1,239.2	NA	.9	--	876.8	187.1	21.1	--	153.4
Average price	Dollars/kilogram	.777	NA	n.a.	--	.787	.850	1.758	--	.621
Price index	NA	114.60	NA	n.a.	NA	113.23	107.73	230.70	NA	87.83
Market share	Percent	1.0	NA	n.a.	--	12.4	3.2	--	--	6.2
Italy:										
Quantity	1,000 kilograms	22,770	7,772	4,406	NA	440	1,031	8,479	367	275
Value	$1,000	15,296.7	4,828.6	2,768.7	NA	310.2	790.4	6,111.4	302.7	184.7
Average price	Dollars/kilogram	.671	.621	.628	NA	.705	.766	.720	.824	.671
Price index	NA	98.96	101.97	113.35	NA	101.43	97.08	94.48	104.17	94.90
Market share	Percent	13.3	12.5	27.4	NA	4.3	13.5	12.3	14.0	7.5
United Kingdom:										
Quantity	1,000 kilograms	490	15	--	--	278	--	--	196	--
Value	$1,000	471.2	12.0	--	--	257.3	--	--	201.8	--
Average price	Dollars/kilogram	.961	.800	--	--	.925	--	--	1.029	--
Price index	NA	141.74	131.36	NA	NA	133.09	NA	NA	130.08	NA
Market share	Percent	.4	--	--	--	3.6	--	--	9.3	--

See notes at end of table.

Continued--

Table 19--Selected information on EC imports of preserved peaches, by member country, 1978-80 average (continued) 1/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
Spain:										
Quantity	1,000 kilograms	143	--	--	--	2	29	112	--	--
Value	$1,000	171.1	--	--	--	2.1	35.5	133.4	--	--
Average price	Dollars/kilogram	1.196	--	--	--	1.050	1.224	1.191	--	--
Price index	NA	176.40	NA	NA	NA	151.07	155.13	156.29	NA	NA
Market share	Percent	.1	--	--	--	--	.6	.2	--	--
Greece:										
Quantity	1,000 kilograms	54,622	27,579	13,550	845	4,275	1,358	5,849	233	933
Value	$1,000	31,921.9	15,106.9	7,141.6	481.7	2,907.5	978.9	4,469.5	193.7	642.0
Average price	Dollars/kilogram	.584	.547	.527	.570	.680	.720	.764	.831	.688
Price index	NA	86.13	89.81	95.12	93.28	97.84	91.25	100.26	105.05	97.31
Market share	Percent	27.9	39.3	70.7	61.4	41.1	16.8	9.4	8.9	26.1
Bulgaria:										
Quantity	1,000 kilograms	772	652	--	--	115	--	--	--	5
Value	$1,000	319.1	257.0	--	--	59.8	--	--	--	2.3
Average price	Dollars/kilogram	.413	.394	--	--	.520	--	--	--	.460
Price index	NA	60.91	64.69	NA	NA	74.82	NA	NA	NA	65.06
Market share	Percent	.2	.6	--	--	.8	--	--	--	--
South Africa:										
Quantity	1,000 kilograms	61,796	13,098	76	179	2,528	3,329	40,673	1,587	326
Value	$1,000	46,537.6	9,052.4	55.2	125.4	1,676.1	2,737.3	31,523.9	1,147.4	219.9
Average price	Dollars/kilogram	.753	.691	.726	.700	.663	.822	.775	.722	.674
Price index	NA	111.06	113.46	131.04	114.56	95.39	104.18	101.70	91.27	95.33
Market share	Percent	40.7	23.5	.5	15.9	23.7	47.0	66.4	53.1	8.9
United States:										
Quantity	1,000 kilograms	16,342	12,002	127	107	956	988	1,722	--	440
Value	$1,000	10,702.6	7,737.3	73.7	70.7	709.6	702.6	1,087.5	--	321.1
Average price	Dollars/kilogram	.654	.644	.580	.660	.742	.711	.631	--	.729
Price index	NA	96.46	105.74	104.69	108.01	106.76	90.11	82.80	NA	103.11
Market share	Percent	9.3	20.1	.7	9.0	10.0	12.0	2.2	--	13.0
Argentina:										
Quantity	1,000 kilograms	175	24	--	--	91	30	18	--	13
Value	$1,000	70.9	10.2	--	--	29.7	13.2	11.0	--	6.8
Average price	Dollars/kilogram	.405	.425	--	--	.326	.440	.611	--	.523
Price index	NA	59.73	69.78	NA	NA	46.90	55.76	80.18	NA	73.97
Market share	Percent	--	--	--	--	.4	.2	--	--	.2

See notes at end of table.

Continued--

Table 19--Selected information on EC imports of preserved peaches, by member country, 1978-80 average (continued) 1/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
Saudi Arabia:										
Quantity	1,000 kilograms	69	—	—	--	—	—	69	--	—
Value	$1,000	64.5	--	--	--	--	--	64.5	--	—
Average price	Dollars/kilogram	.934	--	—	--	—	—	.934	--	--
Price index	NA	137.75	NA	NA	NA	NA	NA	122.57	NA	NA
Market share	Percent	--	--	—	--	—	—	.1	—	--
Australia:										
Quantity	1,000 kilograms	6,458	6	1	--	7	12	5,040	264	1,128
Value	$1,000	4,884.7	6.8	3.5	--	5.3	8.1	3,795.9	226.5	839.5
Average price	Dollars/kilogram	.756	1.133	3.500	--	.757	.675	.753	.854	.744
Price index	NA	111.50	186.04	631.76	NA	108.92	85.55	98.81	107.96	105.23
Market share	Percent	4.2	--	--	--	--	.1	7.9	10.4	34.1
Rest of world:										
Quantity	1,000 kilograms	1,201	303	57	85	177	177	216	80	105
Value	$1,000	1,038.2	231.5	57.5	55.8	162.4	145.0	210.1	88.0	87.8
Average price	Dollars/kilogram	.864	.764	1.008	.656	.917	.819	.972	1.100	.836
Price index	NA	127.43	125.45	181.94	107.36	131.94	103.80	127.55	139.06	118.24
Market share	Percent	.9	.6	.5	7.1	2.2	2.4	.4	4.0	3.5
World:										
Quantity	1,000 kilograms	168,418	62,994	18,218	1,282	10,154	7,365	62,205	2,727	3,473
Value	$1,000	114,264.9	38,417.8	10,101.2	784.3	7,066.9	5,817.9	47,459.8	2,159.0	2,457.7
Average price	Dollars/kilogram	.678	.609	.554	.611	.695	.789	.762	.791	.707

-- = Nil or negligible.
NA = Not applicable.
n.a. = Not available.
1/ Average price at c.i.f. entry, converted from ECU to U.S. dollars using the following ratios: 1978--1:1.274, 1979--1:1.371, 1980--1:1.392. Market shares are based on value.
2/ Quantity not reported by source.

Source: (5).

Mills (13) provides an extensive description of marketing changes which have influenced the economic situation for processed fruits. Some of the salient points developed in his study follow.

Specialist wholesalers conduct most of the processed fruit importing. About 200 of these specialists operated in the principal importing countries during the midseventies. Although their number has steadily diminished, it is sufficiently large to encourage active competition at the importing level. This competition is intensified by the presence of a large number of private brands established by exporters, importers, and various buyers. The establishment of a strong national brand franchise is difficult, and competition focuses on pricing strategies.

Many wholesalers participate in the distribution system, but they are being squeezed out by the forward and backward integration of other marketing agencies. The emergence of large, central buying organizations representing groups of retailers or wholesalers is an important manifestation of this situation. These buying organizations prefer to deal directly with large importers or exporters for sizable quantities. Such firms are well informed about market conditions and relentless in their search for the best buying arrangements. Relatively few of these large buyers control a large volume of the current trade in processed fruits.

Import Prices

The average c.i.f. price for imported canned peaches in the EC during 1978-80 was 30.7 cents per pound. However, prices ranged from 18.4 cents for modest quantities from Argentina to 54.2 cents for equally small amounts from Spain.

Table 20 shows average prices for imports from the major suppliers. Their diversity is due to the wide range of qualities purchased by different importers. The table also gives estimates of duty-paid prices. They are based on the weighted average of tariff rates for all processed fruits because assembling precise weighted data for processed peaches is extremely difficult.

Greek prices were the lowest of all those offered by major suppliers. Prices were 26.5 cents per pound, 10 percent below the nearest major competitor, Italy, and a full 15 cents below the price for the market leader, South Africa.

Price differences arise from the quality, preferences, and price competition that are especially important in West Germany and France. Prices in these countries were lower than those in other EC countries. West Germany and France were important customers for Greece and Italy.

South Africa and Australia had strong positions in the United Kingdom, which tends to be a high-quality, high-price market. Import prices for those two suppliers were considerably above those of other countries, and average prices in the United Kingdom were 12 percent over the EC average.

The U.S. price of about 36 cents per pound was high relative to many suppliers. However, the United States was able to serve a segment of the West German market with preference for high-quality fruit. Presumably, this market was also served by high-priced imports from South Africa.

Interviews in 1979 (14) with six West German importers and associations indicate an unfavorable price and demand situation. The consensus was that consumption of canned fruits is near the saturation level and that extended competition from fresh fruits and prepared desserts will reduce canned peach consumption. Furthermore, the six importers believed that the transportation cost situation would make competitive pricing by the United States extremely difficult. They described the West German market as a dumping ground for processed fruit. Retailers have focused attention on price by using peaches as a loss leader with a margin as low as 3 percent. Under these conditions, price rather than quality becomes the principal criterion for purchase.

Government Intervention

Government programs for intervening in the production and marketing of processed peaches vary among countries. The intervention program for the EC, South Africa, Australia, and Spain are discussed in the following sections.

Table 20--Prices and market shares for processed peaches imported by EC from selected countries, 1978-80 averages

Country	Average price	Estimated weighted tariff 1/	Duty-paid price	Volume market share
	(1)	(2)	(3)	(4)
	Cents/ pound	Percent	Cents/ pound	Percent
Australia	34.3	20.73	41.4	3.8
Bulgaria	18.7	19.36	22.3	.5
Greece	26.5	0	26.5	32.4
Italy	30.4	0	30.4	13.5
South Africa	34.1	21.79	41.5	36.7
Spain	54.2	19.91	65.0	.1
United States	29.7	21.13	36.0	9.7

1/ Based on tariff for all processed fruit imported in 1978.

Sources: Cols. (1), (4), table 19; col.(2) (6); col. (3), calculated.

EC. The EC policy toward processed peaches involves minimum grower prices, processing subsidies, and a complex tariff scheme. The magnitude and impact of minimum price and processing subsidies are extensively described by Haresnape (10) and are summarized here.

The EC subsidy scheme for processed peaches was initiated in 1978 as part of a program covering several processed products. Greece adopted a similar system in 1979 in anticipation of its EC membership. The purpose of the program was to divert surplus fresh production to processing to maintain profitable fresh market prices. The means chosen was a system of subsidies paid to processors that permitted them to pay a specified minimum price to growers and to simultaneously establish competitive prices for canned peaches.

The subsidies are paid to processors who can demonstrate that they have paid at least the official minimum price to growers. The amount of subsidy equals the difference between the c.i.f. prices of comparable third-country products and the sum of the minimum grower price and calculated representative processing costs. The peach subsidy applies only to peaches packed in syrup.

The minimum grower price in 1980 was $447 per metric ton, more than double the California grower price of $207. Processor subsidies amounted to $8.70 per standard case at a time when California market quotations were $13.80 per case, f.o.b. processor (20).

The EC tariff for processed fruits ranges between 22 and 24 percent plus levies (where applicable) on sugar content. This barrier effectively raised prices for most imported canned peaches to a level considerably above that for domestically produced peaches.

The subsidy system for Greece is part of EC policy, but provides for a lower level of payments that increase during a 7-year transitional period to reach the level authorized for other EC countries. The reduced subsidy level is reflected in lower minimum grower prices. These prices were 12 cents per pound in Greece and 16 cents in Italy and France in 1982/83.

Other Producing Countries. Most government policies are currently directed toward reducing processed peach production. The means chosen to implement the policy vary among countries.

In South Africa, the Canning Fruit Board determined the share of peach production to be allocated to the processing industry to obtain the best overall return for growers. The South African Fruit Export Board fixes minimum export prices. A special centralized organization was recently established to control prices more effectively and to prevent

price cutting by canners. A minimum grower price is fixed each year. In 1982, the minimum producer price was $155 per ton, with the Government expected to pay one-third because of poor market conditions. In addition, subsidies are paid for peach tree removals to obtain a more profitable balance between supply and demand.

Australia faces a period of oversupply as export sales to the EC drop. The Government has been asked to provide financial assistance for tree removal. Under Australian law, competitors are permitted to work together to rationalize industry performance. Three major canners have done so in an effort to allocate production efficiently (20). The Australian Canned Fruit Corporation is also the sole official trader for processed peaches.

The Government of Spain grants assistance for the location of processing plants in specialized areas. It also permits an export tax rebate (recently 9 percent) against the f.o.b. value of major canned fruits. This rebate offsets internal taxes. The Government also provides indirect production aids as discussed in previous sections of this study. However, growers are not assured a minimum price.

Production and Exports

The United States was the major world producer and packer of peaches in 1978-80 (table 21). U.S. production of fresh peaches averaged 1.5 million tons during this period, and the pack of processed peaches averaged 483,000 tons. Both production and processing are trending downward because of poor economic returns to growers and processors. Nevertheless, between 1975 and 1980, exports expanded somewhat, and the 1978-80 average was above that for 1968-70.

Most processed peach production in the United States is used domestically; only 13 percent of the pack was exported in 1978-80. This proportion reverses the situation of the other major peach producers. U.S. dependence on EC markets has declined as price pressures have foreclosed profit opportunities in much of that market. However, the EC took 25 percent of U.S. processed peach exports in 1978-80. The United States is, therefore, not tremendously sensitive to changes in the EC, as that market takes only 3 percent of the U.S. pack. However, the U.S. market price will be depressed by losses of EC markets until appropriate adjustments can be made.

Greece is the second major processor of peaches, and its peach industry concentrates on processing rather than on use of fresh peaches. The peach pack averaged 113,000 tons in 1978-80, more than double its 1975 level. This expansion results from a conscious Government policy to increase production of exportable commodities. The Greek industry is export oriented with 86 percent of its 1978-80 pack shipped in export. Of course, this dependence makes Greece vulnerable to changes in the world export market. This vulnerability is one reason that Greece may push for

Table 21--Production and exports of processed peaches by selected countries, 1978-80

Country	Fresh production	Pack production	Exports to all destinations	Imports by the EC	Exports as share of production	EC imports as share of exports
	(1)	(2)	(3)	(4)	(5)	(6)
	1,000 tons	----- Tons -----			-- Percent --	
Italy	1,308.3	30,190	26,551	22,770	87.9	85.8
Greece	364.0	112,934	96,522	54,662	85.5	56.6
South Africa	117.0	108,787	92,529	61,796	85.1	66.8
United States	1,467.3	482,773	64,526	16,342	13.4	25.3

Sources: Col. (1), (7); col. (2), (20); col. (3), (10, 20); col. (4), table 19; cols. (5) and (6), calculated.

a larger market in the EC where market stability is more assured. Greece's peach exports to the EC have become more important as its pack has increased. In 1978-80, 57 percent of the processed peach exports were destined for the EC.

South Africa also has an export-oriented peach processing industry. Although fresh peach production is relatively low, the average peach pack reached 109,000 tons in 1978-80. The pack has been declining as South Africa attempts to adjust to softer export markets. The need for this adjustment is clear because 85 percent of the pack was exported in 1978-80 and 65 percent of the exports were to EC markets.

Italy is the primary EC producer of processed peaches. Although Italy's industry is oriented to fresh market production, the advent of the EC subsidy scheme doubled processed production after 1978. The Italian peach pack is almost entirely for exports; only 12 percent of the pack remained for domestic markets in 1978-80. Of the exports, 86 percent went to other EC members. Italy's peach industry has a substantial stake in the profitability of the EC market and is particularly concerned about the impact of Greece's added production. One reason for worry centers on the processing industry where many small-scale processors are maintained in business by subsidies. These processors are unable to compete economically with the more modern facilities in Greece. A detailed description of the processed fruit industries in Italy and Greece can be found in Haresnape (10).

Impact of EC Enlargement

EC enlargement will likely further reduce the U.S. market share previously diminished by the EC subsidy system. Another important factor is the likely policy toward fruit processors in Spain.

Projections

Table 22 shows projections of EC imports of processed peaches. They are derived from those made by Sarris (17) with certain adjustments described in the appendix. The results in table 22 differ from those obtained by Sarris because of different market shares in the base periods used in each projection. These differences are within the range of normal year-to-year fluctuations.

Sarris (17) used the demand parameters which were estimated for each importing country for processed fruit. He then aggregated individual country results to project EC imports. The overall value of the parameters for the EC were: income elasticity, 1.98; price elasticity, -0.46; and substitution elasticity, 1.06 (15). It is important to note the high average value for income elasticity. For West Germany, the income elasticity was estimated at 2.58. Such levels are important in producing the growth projection in table 22.

Income and enlargement effects on processed peach imports into the EC are projected to be substantial, if the underlying assumptions are realized. Income-stimulated demand is projected to expand imports by $40.6 million, 35 percent above the 1978-80 base level. The price effect of removing tariff and nontariff barriers facing Greece and Spain will add $9.2 million to the import value. The total value of 1986 imports is projected to be $164 million as compared with $114 million in 1978-80.

The benefits of these changes will be spread unevenly among major suppliers. Although each supplier listed in table 22 gains added market volume, Greece is the principal beneficiary. Imports from that country are projected to grow 49 percent by 1986 because of income-related demand increases and by an additional 34 percent because of the price effects of enlargement. EC imports from Greece in 1986 are double their base year level, and the value market share is 10 percent higher.

EC imports from Italy are expected to gain by $4 million, approximately 25 percent, although they would have been $1.6 million higher without enlargement. Imports from South Africa are projected to expand by $8.1 million, although enlargement will cost South Africa $2.8 million in potential sales. Its projected market share is 7 percent below its 1978-80 level.

The United States will lose less than 1 percent of its market share if the projections are realized. The gain in sales is projected to be $4.2 million, with a $1.6-million loss from the price effect of enlargement more than offset by a $5.8 million increase stimulated by demand growth. Imports from Australia are projected to increase less than those from any other major supplier.

Table 22--EC imports of processed peaches from selected countries, 1978-80 average and projected 1986

Country	Base year 1978-80: Value 2/	Share	Changes caused by -- Income 1/: Amount 2/	Pro-portion	Enlargement: Amount 2/	Pro-portion	1986 projection: Value 2/	Share
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1,000 dollars	Percent	1,000 dollars	Percent	1,000 dollars	Percent	1,000 dollars	Percent
West Germany	1,239	1.08	460	37.20	-216	-12.71	1,483	0.90
France	1,210	1.05	674	55.76	-176	-9.38	1,707	1.04
Italy	15,297	13.38	5,402	35.32	-1,571	-7.59	19,128	11.66
Nether-lands	270	.23	144	53.69	-6	-1.65	408	.25
Spain	171	.14	21	12.60	37	19.56	230	.14
United Kingdom	471	.41	235	49.95	-58	-8.27	647	.39
Greece	31,922	27.93	15,565	48.76	16,117	33.94	63,604	38.77
Bulgaria	319	.27	168	52.80	-58	-11.90	429	.26
South Africa	46,538	40.72	10,982	23.60	-2,830	-4.92	54,690	33.33
United States	10,703	9.36	5,810	54.29	-1,613	-9.77	14,900	9.08
Australia	4,885	4.27	780	15.98	-288	-5.09	5,377	3.28
Rest of world	1,240	1.09	310	25.00	-109	-7.00	1,441	.88
Total	114,265	100.00	40,551	35.49	9,229	8.08	164,045	100.00

Note: Percentage totals may not add to 100 because of rounding.

1/ Income effect is caused by changes in consumer income. Enlargement effect is caused by elimination of tariff and nontariff barriers facing Greece and Spain.
2/ Deflated to 1978-80 average.

Sources: Col.(1), table 19; cols. (2), (7), (8), calculated; cols. (3),(4), (5), (6), (17).

Other Considerations

The EC market for processed peaches has changed considerably since EC initiation of processing subsidies, which occurred after the period I used to estimate demand parameters for the projection model. Given this change, it appears that the price disadvantage faced by non-EC suppliers will be greater than projected. Consequently, the market share achieved by such suppliers will probably be smaller than projected.

The lack of growth in the EC market for processed peaches, noted over the past 6 years, raises questions about the likelihood of substantial growth over the 7-year projection period. In the case of a no-growth situation, the EC market will swing even more toward internal suppliers (including Greece and Spain). This situation seems particularly probable if the liberal processing subsidy is continued. The increases in peach processing noted in both Italy and Greece provide a reasonable basis for such an expectation.

Finally, the projected results are contrary to general industry characterizations of the market. Importers interviewed in Western Europe and industry officials interviewed in California believe that future market growth for canned fruits will probably be limited at best. Current attempts to reduce production in South Africa, Australia, and the United States are ample evidence of a pessimistic outlook for EC market growth.

Market results have significantly changed as the result of policy changes. This change is also evident in other commodities. The analysis here supports the contention that the tariff effect of enlargement is inconsequential in comparison with the impact of policy changes. Potential policy choices involve initiating new subsidy programs for production, processing, and exports or imposing systems for quotas or levies which are not now part of the EC program. Evaluation of these types of changes is difficult, and perhaps, impossible, as Sampson and Yeats point out (16). However, such changes remain a distinct and generally unpredictable possibility which create uncertainties about projections based on past economic behavior.

According to Haresnape's analysis (10), Greek processing capacity could limit a massive expansion of Greek production. However, Haresnape also reports that industry members are certain that private capital will provide whatever capital is needed for market growth. If not, Greek industry officials believe that the Government will supply the needed investment. It appears that the added 50,000-60,000 tons of market demand for processed peaches in the EC could be produced in Greece if subsidies remain profitable. Peach production in Greece is expanding as the result of the maturing of large plantings of trees during the past decade, and these plantings will provide a base for some future expansion.

Processed peach supply could be a problem in other producing countries which are currently reducing their production capacity. There seems to be little incentive to change that policy.

PROCESSED TOMATOES

Processed tomatoes are an important input to both industrial and domestic food preparation. Trade is carried on in canned whole tomatoes, tomato paste, and tomato sauces. The U.S. interest focuses on the enlarged EC as an exporter, rather than an importer, of tomato products.

Structural Aspects of EC Trade

The structure of EC trade comprises the import patterns, the network of import prices, the nature of government intervention, and the character of production and exports by the major suppliers to the EC.

Imports

The EC imported an average of 459,000 tons of processed tomatoes per year, with a value of $280 million, during 1978-80 (table 23). Total consumption was considerably higher because Italy and, to a lesser degree, France, provide large supplies for internal consumption.

Many imported tomato products are used for further manufacture and pass through channels of distribution unique to the industrial trade. Second stage processors, if sufficiently large, deal directly with exporters or their importer agents. Participants in this distribution channel are extremely well informed about market conditions and prices, and they are responsive to overall supply and demand conditions (within the constraints of the EC pricing system).

Tomato products destined for consumer use pass through channels of distribution different from those for most industrial trade. These channels are generally more complex and include importers, primary and secondary wholesalers, central buying offices, direct-buying retail chains, or specialty agents. Trends in these channels are toward larger sizes, more integration, and better price stability (13).

Italy was the EC's principal source of processed tomatoes, providing 65 percent of the import supply. The second ranking source was Greece, which furnished only 11 percent of the requirements. Spain was next with 7 percent, followed by Portugal with 5 percent. The aggregate import share of these present or future EC members was 88.5 percent. A few imports originated in other EC countries so that approximately 16 listed "outsiders," plus several unlisted sources in the trade statistics, divided up 10 percent of the EC market.

The most significant "outsider" was Israel which furnished 2.3 percent of the imports in 1978-80. Bulgaria provided a similar amount, but with a much lower value. Morocco and China were next within this group. The United States provided an average of 595 tons during 1978-80 with a value of $438,000. Although the United States has an inconsequential stake in the EC market, it has more than a passing interest in the destinations of potential exports from the expanded EC.

The United Kingdom was the major EC importer of processed tomatoes, taking 203,000 tons, or 44 percent of the EC's total. West Germany received 25 percent of the 1978-80 imports, and France took 12.5 percent.

Table 23--Selected information on EC imports of processed tomatoes, by member country, 1978-80 average 1/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
France:										
Quantity	1,000 kilograms	1,115	158	NA	6	176	626	144	2/	4
Value	$1,000	1,338.3	278.5	NA	4.8	386.1	534.3	129.6	1.4	3.7
Average price	Dollars/kilogram	1.200	1.762	NA	.800	2.193	.853	.900	0	.925
Price index	NA	197.04	300.68	NA	102.82	285.54	137.58	140.57	0	149.43
Market share	Percent	.4	.4	NA	--	1.9	2.2	.1	0	--
Belgium/Luxembourg:										
Quantity	1,000 kilograms	323	22	8	--	229	NA	64	--	1
Value	$1,000	296.4	21.5	5.5	--	236.2	NA	31.4	--	1.8
Average price	Dollars/kilogram	.917	.977	.687	--	1.031	NA	.490	--	1.800
Price index	NA	150.57	166.72	128.41	NA	134.24	NA	79.80	NA	290.79
Market share	Percent	.1	--	--	--	1.2	NA	--	--	--
Netherlands:										
Quantity	1,000 kilograms	2,567	443	5	--	--	1,891	112	115	--
Value	$1,000	2,020.3	332.6	15.8	--	--	1,522.8	100.7	48.4	--
Average price	Dollars/kilogram	.787	.750	3.160	--	--	.805	.899	.420	--
Price index	NA	129.22	127.98	590.65	NA	NA	129.83	146.41	65.52	NA
Market share	Percent	.7	.4	--	--	--	6.5	--	2.4	--
West Germany:										
Quantity	1,000 kilograms	2,515	NA	28	99	1,104	429	187	7	660
Value	$1,000	1,966.6	NA	39.3	79.8	926.7	307.4	169.7	7.0	436.6
Average price	Dollars/kilogram	.781	NA	1.403	.806	.839	.716	.907	1.000	.661
Price index	NA	128.24	NA	262.24	103.59	109.24	115.48	147.71	156.00	106.78
Market share	Percent	.7	NA	.1	1.2	4.7	1.3	.1	.3	8.4
Italy:										
Quantity	1,000 kilograms	302,672	90,389	39,732	NA	7,150	30,277	130,410	1,065	3,649
Value	$1,000	172,981.9	50,560.6	19,791.1	NA	4,137.6	18,433.4	77,443.9	584.6	2,030.8
Average price	Dollars/kilogram	.571	.559	.498	NA	.578	.608	.593	.548	.556
Price index	NA	93.76	95.39	93.08	NA	75.26	98.06	96.57	85.49	89.82
Market share	Percent	61.8	74.6	64.5	NA	21.1	79.0	61.9	29.4	39.5
United Kingdom:										
Quantity	1,000 kilograms	1,529	678	91	--	63	95	NA	584	17
Value	$1,000	1,261.4	558.8	62.1	--	66.3	74.3	NA	487.8	12.0
Average price	Dollars/kilogram	.824	.824	.682	--	1.052	.782	NA	.835	.705
Price index	NA	135.30	140.61	127.47	NA	136.97	126.12	NA	130.26	113.89
Market share	Percent	.4	.8	.2	--	.3	.3	NA	24.5	.2

See notes at end of table.

Continued--

Table 23--Selected information on EC imports of processed tomatoes, by member country, 1978-80 average (continued) 1/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
Switzerland:										
Quantity	1,000 kilograms	1,419	162	908	--	17	8	70	253	--
Value	$1,000	1,281.4	534.3	445.1	--	9.2	25.3	215.6	52.0	--
Average price	Dollars/kilogram	.903	3.298	.490	--	.541	3.162	3.080	.205	--
Price index	NA	148.27	562.79	91.58	NA	70.44	510.00	501.62	31.98	NA
Market share	Percent	.4	.7	1.4	--	--	.1	.1	2.6	--
Portugal:										
Quantity	1,000 kilograms	22,235	606	470	2,413	2,541	431	13,685	151	1,937
Value	$1,000	17,322.8	582.8	934.1	1,956.0	1,729.0	403.7	10,077.4	143.2	1,496.7
Average price	Dollars/kilogram	.779	.961	1.987	.810	.680	.936	.736	.948	.772
Price index	NA	127.91	163.99	371.40	104.11	88.54	150.96	119.86	147.89	124.71
Market share	Percent	6.1	.8	3.0	31.1	8.8	1.7	8.0	7.2	29.1
Spain:										
Quantity	1,000 kilograms	32,520	2,776	5,497	178	1,202	713	21,794	81	279
Value	$1,000	20,088.9	3,813.6	2,785.2	166.2	1,452.3	357.4	11,332.3	38.8	143.1
Average price	Dollars/kilogram	.617	1.373	.506	.933	1.208	.501	.519	.479	.512
Price index	NA	101.31	234.30	94.57	119.92	157.29	80.80	84.52	74.72	82.71
Market share	Percent	7.1	5.6	9.0	2.6	7.4	1.5	9.0	1.9	2.7
Greece:										
Quantity	1,000 kilograms	48,621	9,501	7,216	2,160	10,866	1,376	16,100	696	706
Value	$1,000	35,415.2	6,010.9	4,114.0	1,767.4	9,050.5	933.8	12,475.2	519.9	543.6
Average price	Dollars/kilogram	.728	.632	.570	.818	.832	.678	.774	.746	.769
Price index	NA	119.54	107.84	106.54	105.14	108.33	109.35	126.05	116.38	124.23
Market share	Percent	12.6	8.8	13.4	28.1	46.3	4.0	9.9	26.2	10.5
Turkey:										
Quantity	1,000 kilograms	2,795	410	104	466	87	1	1,724	--	4
Value	$1,000	2,133.0	366.6	64.7	391.1	68.9	.9	1,236.7	--	3.9
Average price	Dollars/kilogram	.763	.894	.622	.389	.791	.900	.717	--	.975
Price index	NA	125.28	152.55	116.26	107.84	102.99	145.16	116.77	NA	157.51
Market share	Percent	.7	.5	.2	6.2	.3	--	.9	--	--
USSR:										
Quantity	1,000 kilograms	1,282	140	--	1,075	54	8	5	--	--
Value	$1,000	872.4	77.6	--	763.0	25.8	3.4	2.5	--	--
Average price	Dollars/kilogram	.680	.554	--	.709	.477	.425	.500	--	--
Price index	NA	111.65	94.53	NA	91.13	62.10	68.54	81.43	NA	NA
Market share	Percent	3	.1	--	12.1	.1	--	--	--	--

See notes at end of table.

Continued--

Table 23--Selected information on EC imports of processed tomatoes, by member country, 1978-80 average (continued) 1/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
Czechoslovakia:										
Quantity	1,000 kilograms	1,313	837	--	--	--	--	470	--	6
Value	$1,000	698.2	474.9	--	--	--	--	220.5	--	2.8
Average price	Dollars/kilogram	.531	.567	--	--	---	--	.469	--	.466
Price index	NA	87.19	96.75	NA	NA	NA	NA	76.38	NA	75.28
Market share	Percent	.2	.7	--	--	--	--	.1	--	--
Hungary:										
Quantity	1,000 kilograms	2,896	364	158	203	1,398	114	659	--	--
Value	$1,000	2,191.9	230.0	144.0	172.8	1,120.3	83.0	441.7	--	--
Average price	Dollars/kilogram	.756	.631	.911	.851	.801	.728	.670	--	--
Price index	NA	124.13	107.67	170.28	109.38	104.29	117.41	109.12	NA	NA
Market share	Percent	.7	.3	.4	2.7	5.7	.3	.3	--	--
Bulgaria:										
Quantity	1,000 kilograms	10,891	2,555	113	689	142	1,389	5,629	3	370
Value	$1,000	4,126.1	921.3	42.4	519.8	61.0	488.7	1,950.3	3.4	139.3
Average price	Dollars/kilogram	.378	.360	.375	.754	.429	.351	.346	1.133	.376
Price index	NA	62.06	61.43	70.09	96.91	55.85	56.61	56.35	176.75	60.74
Market share	Percent	1.4	1.3	.1	8.2	.3	2.0	1.5	.1	2.7
Canary Islands:										
Quantity	1,000 kilograms	59	--	--	--	--	--	59	--	--
Value	$1,000	58.2	--	--	--	--	--	58.2	--	--
Average price	Dollars/kilogram	.986	--	--	--	--	--	.986	--	--
Price index	NA	161.90	NA	NA	NA	NA	NA	160.58	NA	NA
Market share	Percent	--	--	--	--	--	--	--	--	--
Morocco:										
Quantity	1,000 kilograms	4,745	16	1,531	--	--	--	3,198	--	--
Value	$1,000	5,159.5	40.3	1,516.8	--	--	--	3,602.3	--	--
Average price	Dollars/kilogram	1.087	2.518	.990	--	--	--	1.126	--	--
Price index	NA	178.48	429.69	185.04	NA	NA	NA	183.38	NA	NA
Market share	Percent	1.8	--	4.9	--	--	--	2.8	--	--
Tunisia:										
Quantity	1,000 kilograms	84	--	84	--	--	--	--	--	--
Value	$1,000	82.0	--	82.0	--	--	--	--	--	--
Average price	Dollars/kilogram	.976	--	.976	--	--	--	--	--	--
Price index	NA	160.26	NA	182.42	NA	NA	NA	NA	NA	NA
Market share	Percent	--	--	.2	--	--	--	--	--	--

See notes at end of table.

Continued--

Table 23--Selected information on EC imports of processed tomatoes, by member country, 1978-80 average (continued) 1/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
South Africa:										
Quantity	1,000 kilograms	428	57	--	222	--	--	149	--	--
Value	$1,000	202.0	27.9	--	103.3	--	--	70.8	--	--
Average price	Dollars/kilogram	.471	.489	--	.465	--	--	.475	--	--
Price index	NA	77.33	83.44	NA	59.76	NA	NA	77.36	NA	NA
Market share	Percent	--	--	--	1.6	--	--	--	--	--
United States:										
Quantity	1,000 kilograms	595	7	--	417	2/	73	97	2/	1
Value	$1,000	438.4	4.1	--	285.0	.4	70.3	77.3	.5	.9
Average price	Dollars/kilogram	.736	.585	--	.683	n.a.	.963	.796	n.a.	.900
Price index	NA	120.85	99.82	NA	87.78	n.a.	155.32	129.64	n.a.	145.39
Market share	Percent	.1	--	--	4.5	n.a.	.3	--	n.a.	--
Costa Rica:										
Quantity	1,000 kilograms	78	--	--	--	--	--	78	--	--
Value	$1,000	64.9	--	--	--	--	--	64.9	--	--
Average price	Dollars/kilogram	.832	--	--	--	--	--	.832	--	--
Price index	NA	136.61	NA	NA	NA	NA	NA	135.50	NA	NA
Market share	Percent	--	--	--	--	--	--	--	--	--
Chile:										
Quantity	1,000 kilograms	467	--	--	--	101	--	366	--	--
Value	$1,000	367.1	--	--	--	72.2	--	294.9	--	--
Average price	Dollars/kilogram	.786	--	--	--	.714	--	.805	--	--
Price index	NA	129.06	NA	NA	NA	92.96	NA	131.10	NA	NA
Market share	Percent	.1	--	--	--	.3	--	.2	--	--
Argentina:										
Quantity	1,000 kilograms	1,863	311	--	--	9	84	1,097	--	362
Value	$1,000	876.9	195.8	--	--	4.7	38.6	479.9	--	158.0
Average price	Dollars/kilogram	.470	.629	--	--	.522	.459	.437	--	.436
Price index	NA	77.17	107.33	NA	NA	67.96	74.03	71.17	NA	70.43
Market share	Percent	.3	.2	--	--	--	.1	.3	--	3.0
Israel:										
Quantity	1,000 kilograms	10,345	2,096	1,190	--	116	6	6,737	123	77
Value	$1,000	6,087.6	1,139.4	540.6	--	104.4	4.7	4,173.2	86.8	38.6
Average price	Dollars/kilogram	.588	.543	.454	--	.900	.783	.619	.705	.501
Price index	NA	96.55	92.66	84.85	NA	117.18	126.29	100.81	109.98	80.93
Market share	Percent	2.2	1.7	1.8	--	.5	0	3.3	4.4	.8

See notes at end of table.

Continued--

Table 23--Selected information on EC imports of processed tomatoes, by member country, 1978-80 average (continued) 1/

Exporter and item	Unit	EC	West Germany	France	Italy	Netherlands	Belgium-Luxembourg	United Kingdom	Ireland	Denmark
China:										
Quantity	1,000 kilograms	4,170	3,925	--	--	15	5	95	--	129
Value	$1,000	1,646.2	1,531.5	--	--	6.2	3.2	48.5	--	56.8
Average price	Dollars/kilogram	.394	.390	--	--	.413	.640	.510	--	.440
Price index	NA	64.69	66.55	NA	NA	53.77	103.22	83.06	NA	71.08
Market share	Percent	.5	2.2	--	--	--	--	--	--	1.1
Rest of world:										
Quantity	1,000 kilograms	1,099	91	83	145	151	76	451	13	89
Value	$1,000	652.1	54.0	55.1	71.9	88.9	40.2	282.1	10.0	69.8
Average price	Dollars/kilogram	.593	.593	.663	.495	.588	.528	.581	.769	.784
Price index	NA	97.37	101.19	123.92	63.62	76.56	85.16	94.62	119.96	126.65
Market share	Percent	.2	--	.1	1.1	.4	.1	.2	.5	1.3
World:										
Quantity	1,000 kilograms	458,628	115,546	57,220	8,072	25,422	37,604	203,381	3,093	8,290
Value	$1,000	279,629.7	67,757.0	30,637.7	6,281.1	19,546.7	23,325.4	124,959.7	1,983.6	5,138.4
Average price	Dollars/kilogram	.609	.586	.535	.778	.768	.620	.614	.641	.619

-- = Nil or negligible.
NA = Not applicable.
n.a. = Not available.
1/ Average price at c.i.f. entry, converted from ECU to U.S. dollars using the following ratios: 1978--1:1.274, 1979--1:1.371, 1980--1:1.392. Market shares are based on value.
2/ Quantity not reported by source.

Source: (5).

Import Prices

The average price for imports from Italy was lower than that for any other major supplier. The lower price can be explained by the product mix over which the average price was computed, the quality of the products involved, and the advantageous subsidy and tariff treatment accorded to Italian processors. The average price of processed tomatoes imported from Italy during 1978-79 was 25.9 cents per pound (table 24). The average price of imports from Italy was reasonably consistent for all importing countries, except France. The average price in that market was 23 cents per pound, indicating a product mix toward the low end of the price scale (tomato paste).

Comparisons among other suppliers show similar price variations. Bulgaria and Israel earned almost identical market shares, although the price for Bulgarian imports was 20 cents per pound, indicating a product mix toward the low end of the pricing scale, whereas the price of Israeli processed tomatoes was 31 cents. Prices for Spain and Greece were similar to that for Israel.

Average c.i.f. entry prices paid by EC countries ranged from 24 cents per pound in France to 36 cents in the Netherlands. France's low import price resulted from a product mix more heavily weighted by paste and other low-cost products than the EC average. Part of the price difference results from lower freight costs arising from France's favorable location relative to Italy and Spain. Higher prices in the Netherlands arise from a different product mix favoring consumer items and a longer, more costly shipping distance. These examples illustrate both the uniqueness of individual demand and supply situations and the risks of making judgments based on aggregate data.

Table 24--Average prices and market shares for processed tomatoes imported by the EC from selected countries, 1978-80 averages

Country	Average price c.i.f. entry	Estimated weighted tariff rate 1/	Duty-paid price	Volume market share
	(1) Cents/pounds	(2) Percent	(3) Cents/pound	(4) Percent
Bulgaria	17.1	19.2	20.4	2.4
Greece	33.0	0	33.0	10.6
Israel	26.7	15.6	30.9	2.3
Italy	25.9	0	25.9	66.0
Portugal	35.3	12.5	39.7	4.8
Spain	28.0	14.2	32.0	7.1
United States	33.4	18.3	39.5	.1

1/ Weighted average of the rates for all processed vegetables imported from each country in 1978.

Sources: Cols. (1), (4), from table 23; col.(2), computed from (6, various issues); col. (3), calculated.

Government Intervention

Government programs for intervening in the production and marketing of processed tomatoes vary among countries. The intervention programs for the EC, Spain, and Portugal are discussed in the following sections.

EC. Tomatoes are an important product in the EC subsidy program which was introduced for several commodities in 1978. The program was designed to help economically depressed areas in France and Italy that were threatened by potential competition from Greece and Spain after EC enlargement. The system is similar to the one described earlier for processed peaches. The program makes substantial subsidies available to processors who demonstrate that they have paid a previously determined minimum price to growers for processing tomatoes. These subsidies were established at very high levels and prompted a 30- to 35-percent production increase which led to surpluses and caused severe difficulties in marketing processed tomato products. The subsidy system was extended to Greece in 1981 in increments until the transition period is completed in 1988. Table 25 compares the level of EC subsidies in 1978 with those in Greece and with U.S. grower and processor prices. The comparison shows that Italian processors paid much less for raw product than did U.S. processors, but Italian growers received substantially more than their American counterparts.

One result of the EC subsidy was greater price stability which may have stimulated expansion as much as did the increase in price level. The subsidy also encouraged some producers to move

Table 25--Comparison of subsidies and product prices for tomato paste in Greece, Italy, and the United States, 1978

Country	Type of subsidy	Processor subsidy		Market prices	
		Per unit of processed product	Equivalent raw product 1/	Raw product	Processed product
		Dollars per ton			
Greece	Export rebate to processors	265.60	48.90	57.42	591.34
Italy	Payment to processors who pay at least the minimum grower price	446.40	82.18	93.30	655.49
United States	None	0	0	58.32	674.53

1/ Converted at 5.432:1.

Source: (25).

into the processing sector. The net result has been to provide a base for export expansion partly because of increased production and partly because the industrial sector is better organized for such purposes than is the fresh sector.

Other Producing Countries. Spain and Portugal employ other systems for protecting growers or processors. Some of these are described in Uyeshiro (26). The system in Spain is somewhat variable, although it generally focuses on indirect aids for pest control, facilities development, or fuel purchases. Subsidies are often paid to growers of fresh tomatoes. Processors receive a rebate on exports similar to that for processed peaches (described in the preceding section).

Production and Exports

The United States dominated tomato production in 1980 and accounted for 16 percent of the world's total. The other major producers were the USSR, Italy, China, and Turkey. Except for Italy, none of these producers is a major exporter.

Production shares shifted during the seventies as producing countries adjusted their output to changing economic conditions. World production expanded by 18 million tons, or 59 percent, during the decade. U.S. production grew at a slower rate, 22 percent (1.4 million tons), while increases were more rapid in the USSR, 118 percent (3.8 million tons), and in Turkey, 80 percent (1.7 million tons). Figures are somewhat less reliable for China, but production expanded by approximately 4.3 million tons.

Data on processing are less complete than those for raw product production. However, USDA's Foreign Agricultural Service estimates canned tomato and tomato paste production in selected countries (for example, see (25)). Although the data are incomplete as to the number of producing countries and the range of processed products, they do allow us to compare the two most significant items in world trade. They show that Italian output of canned tomatoes and paste was 1.14 million tons in 1980 as compared with U.S. production of 890,000 tons. Italian production of these two products was very heavily weighted toward canned tomatoes (77 percent by product weight). The next ranking processors of canned tomatoes and paste were Greece, 209,000 tons; Spain, 165,000 tons; and Portugal, 110,000 tons.

During the seventies, production of canned tomatoes and paste became increasingly concentrated in Italy, France, and Greece. The role that subsidies played in this concentration is clear when one compares production shares for the periods immediately before and after the introduction of subsidies in those countries in 1978. The share of canned tomato production accounted for by Italy, France, and Greece--out of eight major producing countries--averaged 45 percent in 1977-78 and 58 percent in 1978-80 (25). Italy, France, and Greece also experienced a sharp increase in concentration in tomato paste production. With data reported for 10 countries, these three countries increased their shares from 28 percent in 1977-78 to 46 percent in 1978-80 (25). During the same period, production

in the important competing nations of Spain, Portugal, and Morocco declined by 15 percent for paste and by 27 percent for canned tomatoes. This disruption in production patterns and the potential for further market distortion stimulated U.S. complaints and demands for countervailing duties against imports from countries that subsidize tomato growing and processing.

The domestic market absorbs almost all the enormous U.S. tomato production. Consequently, the U.S. share of world processed tomato exports is small, ranging from 5 to 7 percent. Slightly less than 75 percent of U.S. exports are destined for Canada. Italy and Spain dominate reported world trade in canned tomatoes with a combined market share in 1974 in excess of 90 percent. Trade shares for tomato paste are more evenly divided among countries, although Italy, Portugal, and Greece are the leading exporters. Portugal's export share is declining as Greece's output grows.

Table 26 summarizes processed tomato production and exports for the 1978-80 period. The data show varying degrees of dependence on export markets among the major producing countries; Portugal shows the highest dependence at 73 percent, and Italy the lowest at 40 percent. Most countries had a limited reliance on EC markets. Among major suppliers, Italy had the largest share of exports--63 percent--directed to the EC. Greece shipped about 44 percent of its exports to the EC; Spain, 40 percent; and Portugal, 28 percent.

Table 26--Production and exports of processed tomatoes, by selected countries, 1978-80

Country	Fresh production	Pack production	Exports to all destinations	Imports by the EC	Exports as share of production	EC imports as share of exports
	(1)	(2)	(3)	(4)	(5)	(6)
	1,000 tons		Tons		Percent	
Bulgaria	107	n.a.	13	11	n.a.	84.6
Greece	1,711	200	112	49	56.0	43.8
Israel	251	21	9	4	42.9	44.4
Italy	4,659	1,206	482	303	40.0	62.9
Portugal	656	108	79	22	73.1	27.9
Spain	2,200	158	81	33	51.3	40.7

n.a. = Not available.

Sources: Col. (1), (7); cols. (2), (3), (4), (25); cols. (5), (6), calculated.

Impact of EC Enlargement

EC enlargement will change import patterns slightly because trade barriers facing the acceding countries will be eliminated. The extension of processing subsidies to the new members is likely to cause far greater impact. This change could well stimulate exports to non-EC markets.

Projections

Table 27 presents projections of EC imports of processed tomatoes. The projections are derived from those made by Sarris (17) with modifications described in the appendix. Sarris estimated demand parameters for processed vegetables as a class for each importing country and used these parameters in developing projections for processed tomatoes. The values of

Table 27--EC imports of processed tomatoes, from selected countries, 1978-80 average and projected 1986

Country	Base year 1978-80: Value 2/	Share	Changes caused by -- Income 1/: Amount 2/	Pro-portion	Enlargement: Amount 2/	Pro-portion	1986 projection: Value 2/	Share
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1,000 dollars	Percent	1,000 dollars	Percent	1,000 dollars	Percent	1,000 dollars	Percent
Greece	35,415	12.7	14,350	40.5	10,425	21.0	60,190	14.6
Israel	6,088	2.2	2,278	37.4	-358	-4.3	8,008	1.9
Italy	172,982	61.9	76,717	44.4	-9,713	-3.9	239,986	58.4
Morocco	5,160	1.8	2,158	41.8	-361	-4.9	6,957	1.7
Portugal	17,323	6.2	6,743	38.9	5,097	21.2	29,163	7.1
Spain	20,089	7.2	7,963	39.6	8,014	28.6	36,066	8.8
United States	438	0.2	212	48.6	-15	-2.4	635	0.2
Rest of world	22,135	7.9	9,186	41.5	-1,253	-4.0	30,068	7.3
Total	279,630	100.0	119,607	42.8	11,836	4.2	411,073	100.0

Note: Percentage totals may not add to 100 because of rounding.

1/ Income changes are those created by income growth without accounting for price effects of eliminating barriers facing Greece, Spain, and Portugal.
2/ Deflated to 1978-80 average.

Sources: Col. (1), table 23; cols. (2), (7), (8), calculated; cols. (3), (4), (5), (6), (17).

the parameters for the EC are: income elasticity, 2.24; price elasticity, -0.72; and substitution elasticity, 1.38 (17).

The substantial growth in processed tomato imports that is projected for 1986 results almost entirely from the high value for the income elasticity of demand. The results in table 27 differ from those calculated by Sarris because the two projection models use different import values and market shares in the base periods.

If the assumptions underlying the model are met, then the value of processed tomato imports will increase from $280 million in 1978-80 to $411 million in 1986. Income effects will stimulate $120 million of the increase, and the price impact of removing tariff and nontariff barriers facing the acceding countries will add $12 million. As with other commodities analyzed here, the price effect of enlargement is projected to be far less than the income effect of a growing economy.

Spain will be the major beneficiary of the enlargement. Spain's exports to the EC are projected to increase by 80 percent, or $16 million. Greece and Portugal will expand their EC exports by about 70 percent, adding about $36 million. Italy will maintain its position as the principal supplier even though its market share will drop slightly. Although Italy's exports to the EC are projected to increase by $67 million, they would have been almost $10 million higher without enlargement.

Each major supplier outside the enlarged EC is projected to gain in absolute volume, but to lose in import market share. However, the market share changes are relatively minor.

Other Considerations

I derived the projections in table 27 by using a fairly high income elasticity of demand. These projections reflect the rapid growth in consumption of processed tomato products during the late sixties and seventies. The question as to the future direction of consumption is still moot. Recent declines in the expansion of tomato processing in non-EC countries and slowdowns in worldwide economic growth indicate that future increases in processed tomato consumption may be below past increases.

If current economic conditions are sustained, the growth rates used in Sarris' (17) projections will not be realized. However, the model can be used to test any assumed growth rate. In the absence of much income-induced demand growth, it is apparent that the new members of the EC will displace "outside" suppliers far more than my projections indicate.

The EC subsidy policy has greatly influenced the processing of tomatoes in Italy, and more recently, in Greece. If the policy is continued in its early liberal form, the competitive damage to trade share will be greater than projected. However, an easing away from the extremely high levels of subsidy that characterized the first 2 years would probably moderate the tendency toward expansion in Italy and Greece. One should consider projected results in the context of various policy

scenarios to estimate the range of likely outcomes. In 1982, the EC appeared to be moving away from extremely high levels of subsidy. Whether this change will continue is as much a political as an economic issue.

The commodity class projections made by Sarris (15) indicate total processed vegetable exports from Greece, Spain, and Portugal will double by 1986. The portion available for export to non-EC markets will increase export availability for these markets 65 percent. However, the non-EC market is projected to increase 48 percent for all processed vegetables. The result is a production level likely to exceed demand; some of these products will be processed tomatoes.

This projection indicates that a large component of tomato exports from countries likely to join the EC will substantially disrupt the processed tomato trade in third country markets. This conclusion is speculative, but suggests that a detailed analysis of the potential supply response in the acceding countries is critical. If sufficiently reliable data can be obtained, the methodology in Sarris's study (17) can be used to evaluate such impacts.

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APPENDIX: THE SARRIS MODEL AND ADAPTATIONS

Sarris reports the theoretical basis and the empirical estimation of the trade models in his report (17). This appendix summarizes the models and describes the adaptations used for projections in my report.

Sarris developed two trade models. The first involved the specification of its parameters for trade in fresh, dried, and processed fruit and fresh and processed vegetables. The second model was of EC imports of oranges, table grapes, almonds, raisins, processed peaches, and processed tomatoes. These commodity models used some of the parameters estimated for the more comprehensive world trade model.

The commodity class model was based on a series of linear equations that expressed changes in import market share as a function of changes of income in importing countries and of changes in the c.i.f. prices of various exporters to each country. Sarris estimated parameters where adequate trade data were available, as for the EC countries. For other countries, he used estimates of import substitution, income and price elasticity of imports, and export supply price elasticity developed in other studies (17).

Sarris made projections of the future commodity class trade flows in two steps. First, he introduced projections of consumer income for each country into the model that stimulated increased import demand, changed prices, and generated supply responses which resulted in a new set of trade patterns. The results were obtained under the assumption that trade barriers were unchanged from the pre-enlargement case.

Sarris relaxed the trade barrier assumptions in the second step to calculate the price effects of enlargement. He reduced the prices of imports from Spain, Greece, and Portugal by an amount equivalent to the value of the EC tariff and nontariff barriers (principally levies) facing those countries. These price changes altered the quantities demanded from various exporters and resulted in a projection of post-enlargement trade. The price effect of enlargement was the value difference in various trade flows between the first-step and second-step projections.

Sarris computed the tariff barriers to trade in the five classes of commodities from EC tariff schedules. He assumed the nontariff barriers were the same as those derived by Sampson and Yeats (16) for trade in 1974. The values were 37.1 percent of the c.i.f. price for fresh and dried fruits and vegetables and 26.8 percent for processed fruits and vegetables.

Data limitations prevented the estimation of a world trade model for individual commodities of concern here. The empirical model Sarris (17) used for the commodity projections consisted primarily of the EC demand component of the more complete and closed model of commodity class trade flows. Import supply curves were assumed to be infinitely elastic in the individual

commodity equations. The exogenous variables were the growth rates of real income and the percentage changes in c.i.f. prices.

Sarris (17) assumed that the parameters of the commodity models for each EC country were the same as those for the relevant commodity class model. He activated the commodity equation system by introducing projections of consumers spending changes for each EC country (the average yearly real growth projected for the EC as a whole was 2.7 percent) and by reducing 1986 prices for imports from Greece, Spain, and Portugal based on elimination of tariff and nontariff barriers. He also explored several results by varying the assumptions about exogenous changes and the values of specific parameters. I projected 1986 results by applying the percentage changes Sarris had calculated to 1978-80 average import values.

The parameters summarized for the EC are as follows:

Commodity	Demand elasticity		
	Income	Own price	Substitute price
Oranges, grapes, almonds	0.65	-0.17	0.66
Raisins	.47	- .31	.99
Processed peaches	1.98	- .46	1.06
Processed tomatoes	2.24	- .72	1.38

Source: (17).

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